bürkert
FLUID CONTROL SYSTEMS

Type 8619
multiCELL

Modular transmitter/controller
Modularer Transmitter/Controller
Transmetteur/contrôleur modulaire

Quickstart

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We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modifications techniques.

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Operating Instructions 1006/00_EU-ML_00561095_Original_FR

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1. ABOUT THE QUICKSTART

The Quickstart describes the entire life cycle of the device. Please keep it in a safe place, accessible to all users and any new owners.

Important safety information.

Failure to comply with the information mentioned especially at chapters *Intended use* and *Basic safety instructions* can lead to hazardous situations.

- This Quickstart must be read and understood.

The Quickstart describes the main steps to be carried out when installing, commissioning and programming the device.

Refer to the corresponding instruction manual to get a complete description of the device.

The instruction manual for type 8619 can be found on the CD provided with the device or on internet under:
www.burkert.com → Documentation→ Datasheets or Manuals/Approvals → Type 8619

1.1. Symbols used

DANGER

Warns you against an imminent danger.

- Failure to observe this warning can result in death or in serious injury.

WARNING

Warns you against a potentially dangerous situation.

- Failure to observe this warning can result in serious injury or even death.

CAUTION

Warns you against a possible risk.

- Failure to observe this warning can result in substantial or minor injuries.

NOTE

Warns you against material damage.

- Failure to observe this warning may result in damage to the device or system.

Indicates additional information, advice or important recommendations for your safety and for the correct operation of the device.

Refers to information contained in this manual or in other documents.

→ Indicates a procedure to be carried out.

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2. INTENDED USE

Use of this device that does not comply with the instructions could present risks to people, nearby installations and the environment.

- The device is intended, depending on the modules fitted and the measurement sensors connected, for the acquisition, processing, transmission and regulation of physical parameters such as pH, conductivity, temperature or flow rate... .
- This device must be protected against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of climatic conditions.
- This device must be used in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the user manual.
- Requirements for the safe and proper operation of the device are proper transport, storage and installation, as well as careful operation and maintenance.
- Only use the device as intended.

2.1. Restraints

Observe any existing restraints when the device is exported.

2.2. Foreseeable misuse

- Do not use this device in explosive atmospheres.
- Do not use this device in an environment incompatible with the materials from which it is made.
- Do not make any external modifications to the device such as for instance painting or varnishing any part of the device.
- Do not power the device with an AC voltage or a DC voltage higher than 36VDC.

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3. BASIC SAFETY INFORMATION

This safety information does not take into account:

- any contingencies or occurrences that may arise during assembly, use and maintenance of the device.
- the local safety regulations that the operator must ensure the staff in charge of installation and maintenance observe.

Danger due to electrical voltage.

- Shut down and isolate the electrical power source before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

Various dangerous situations.

To avoid injury take care to:

- prevent any power supply switch-on.
- carry out the installation and maintenance work by qualified and skilled staff with the appropriate tools.
- guarantee a set or controlled restarting of the process after a power supply interruption.
- use the device only if in perfect working order and in compliance with the instructions provided in the user manual.
- observe the general technical rules during the planning and use of the device.

NOTE

Elements / Components sensitive to electrostatic discharges

- This device contains electronic components sensitive to electrostatic discharges. They may be damaged if they are touched by an electrostatically charged person or object. In the worst case scenario, these components are instantly destroyed or go out of order as soon as they are activated.
- To minimise or even avoid all damage due to an electrostatic discharge, take all the precautions described in the EN 100 015-1 norm.
- Also ensure that you do not touch any of the live electrical components.

This device was developed with due consideration given to accepted safety rules and is state-of-the-art. However, risks may arise.

Failure to observe these instructions as well as any unauthorised work on the device excludes us from any liability and also nullifies the warranty which covers the device and its accessories.

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4. GENERAL INFORMATION

4.1. Contents of the delivery

When you receive the merchandise, make sure that the contents of the delivery have not been damaged in any way and ensure that they correspond exactly with the delivery note or packing list. If this is not the case, contact your retailer immediately.

The addresses of our international branches can be found on the last pages of this manual. They can also be found on the Internet under: www.burkert.com ➔ Bürkert ➔ Company ➔ Locations.

4.2. Warranty conditions

The condition governing the legal warranty is the conforming use of the 8619 type multiCELL in observance of the operating conditions specified in this manual.

The terms and conditions of any warranty are governed by our general terms and conditions of sale.

The legal warranty only covers possible defects in the 8619 type multiCELL and its components.

Bürkert cannot be held responsible for any losses or damage related to the product, the service, this warranty or other, including financial or intangible losses, the price paid for the product, a loss of profits, revenues, data, enjoyment or use of the product or of any related product, or indirect or fortuitous loss or damage.

In the event of differences in interpretation and understanding of this chap. *4.2*, the French version alone shall prevail.

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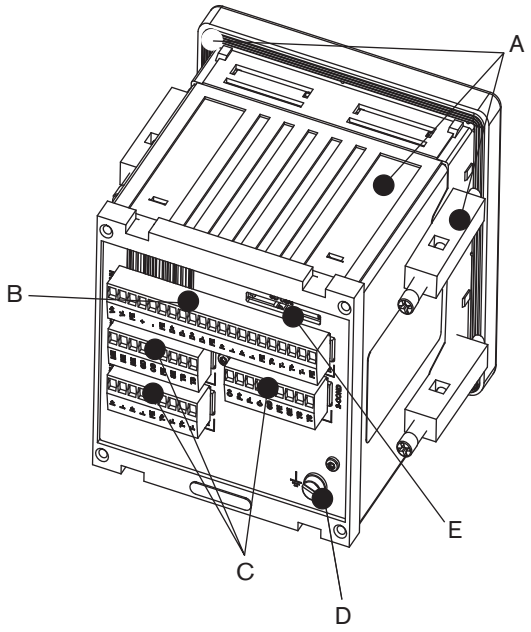
5. DESCRIPTION

5.1. Area of application

The 8619 multiCELL is a multifunction device intended to display, transmit and regulate various physical parameters. It can be used, for example, to manage a water treatment system (a boiler, a cooling tower or a reverse osmosis system).

5.2. General description

5.2.1. Construction



A: standardised 1/4 DIN housing (92x92 mm) with seal, to be built into and attached to the door of the electrical switch housing or cabinet using 4 locking systems.

B: a main board (identified by "M0:MAIN" on the rear plate) :

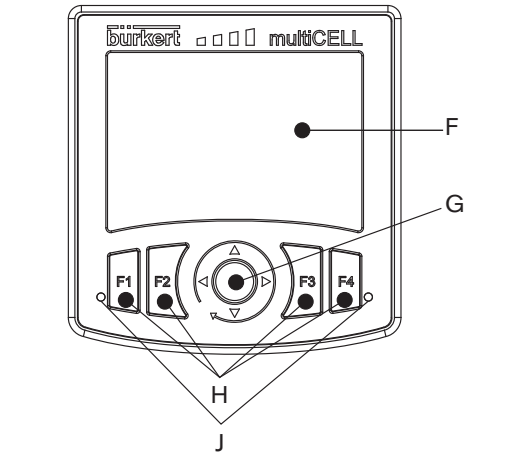
- used to connect the electrical power source of the multiCELL;
- used to power another device, e.g. a flow-rate sensor;
- offering 2 digital inputs (identified by "DI", digital input), two 4-20 mA current outputs (identified by "AO", analogue output) and 2 digital outputs (identified by "DO", digital output).

C: 1 to 6 slots for placing the following modules:

- light grey module for connection of a pH or oxidation reduction potential sensor and/or a temperature sensor
- green module for connection of a conductivity sensor and/or a temperature sensor
- black module with two 4-20 mA current outputs and 2 digital outputs.

D: functional ground screw (connected internally to all "FE" terminals on the main board and additional modules).

E: memory card (SD type) reader/recorder



F: display with backlight.

G: navigation button (4 directions).

H: 4 dynamic keys (function keys with dynamic changing assignment).

J: 2 LEDs.

Fig. 1: Design of an 8619

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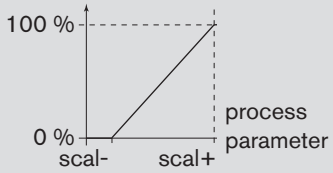
5.3. Functional description

The multiCELL is used to link each input to a function (dosing, for example) which can be fully configured by the user. Depending on the selected model, the following functions are offered as standard or as options:

Function	Availability	Formula	Example for usage
Arithmetic	Standard on all models	A+B, A-B, A/B	Arithmetic procedure between 2 values with the same unit. A or B may be the result of another function.
PASS	Standard on all models	A/B x 100%	Calculation of the passage rate.
REJECT	Standard on all models	(1 - A/B) x 100%	Calculation of the rejection rate.
DEVIAT	Standard on all models	(A/B - 1) x 100%	Calculation of the deviation rate.
PROP (proportional)	Standard on all models		Calculation of an output proportionally to bounded input.
ON/OFF	Standard on all models	ON/OFF control	For all input types.
Flow rate measurement	▪ Standard on models 560205 or 560213 ▪ Optional on all the other models		Each of the 2 digital inputs can be used to measure the flow rate.
PID	Optional	Continuous regulation	For all input types; with internal or external setpoint.
Time dosing	Optional		In a cooling tower, for example; used to dose 2 products at fixed intervals or for twice daily dosing scheduled over one week. The time dosing function can be combined with an ON/OFF function on a conductivity measurement only, in order to ensure prebleed of the system. The "ON/OFF" function must be configured and activated before the time dosing function.
Volume dosing	Optional		Dedicated to cooling towers. Metering of a specific volume of water and activation of an actuator during a specific period in order to add a product, and finally reset the water volume to zero.
Concentration	Optional		The concentration graphs for certain compounds such as NaCl and H_2SO_4 are memorised for use over the entire concentration range.
Datalogger on memory card	Optional		Option to memorise the variations in 1 to 16 values in a given time interval.

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6. TECHNICAL DATA

6.1. Conditions of use

Ambient temperature:	-10… +60°C (operating) restricted to 0 ... +60°C if a memory card is used
Air humidity:	< 85%, non condensated
Protection rating:	IP65 and NEMA4X (on front, once built in, housing closed) IP20 (non front parts inside the housing)

6.2. Compliance to standards and directives

- EMC: EN 61000-6-2 (2005), EN 61000-6-3 (2001)
- Vibration: EN 60068-2-6
- Shock: EN 60068-2-27

UL recognised devices ( ) for the United States of America and Canada with variable key PE72 also comply to the following standards:

- UL 61010-1
- CAN/CSA-C22.2 n° 61010-1

6.3. General technical data

6.3.1. Mechanical data

Mechanical data	Material
Built in and locking system / seal	PPO / silicone
Front cover, upper layer, and keys / front cover, sublayer, and display	Silicone / PC
Rear plate	Stainless steel 304
Terminal blocks	PBT, contacts in gold-plated copper alloy
Ground screw + spring washer	Stainless steel 316 (A4)

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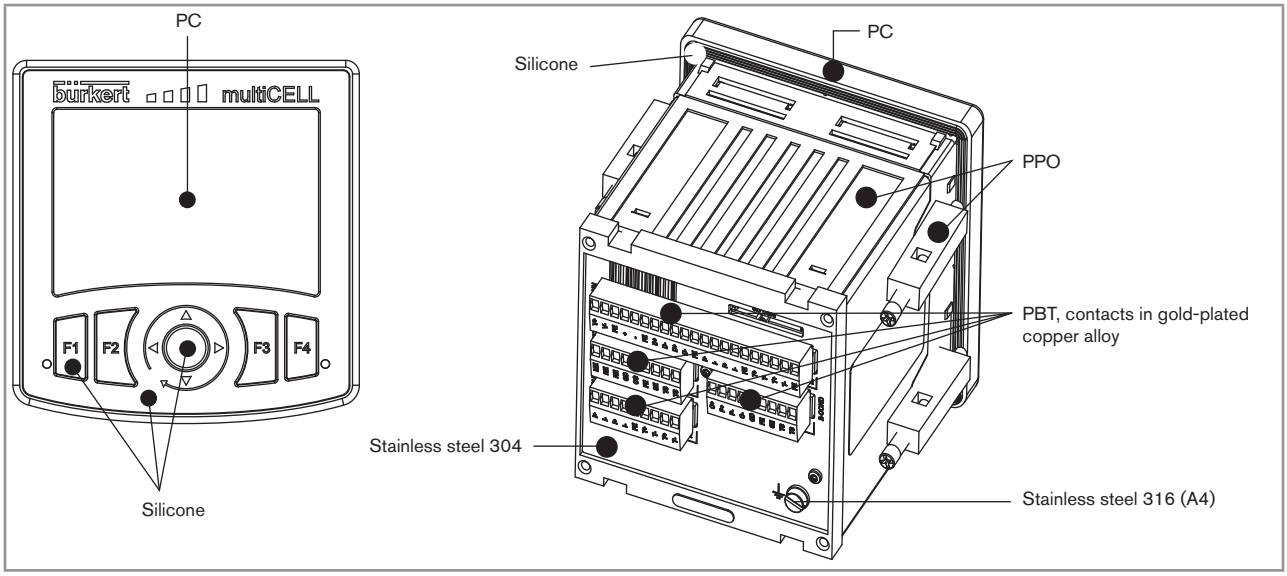

Fig. 2: Materials used for the multiCELL

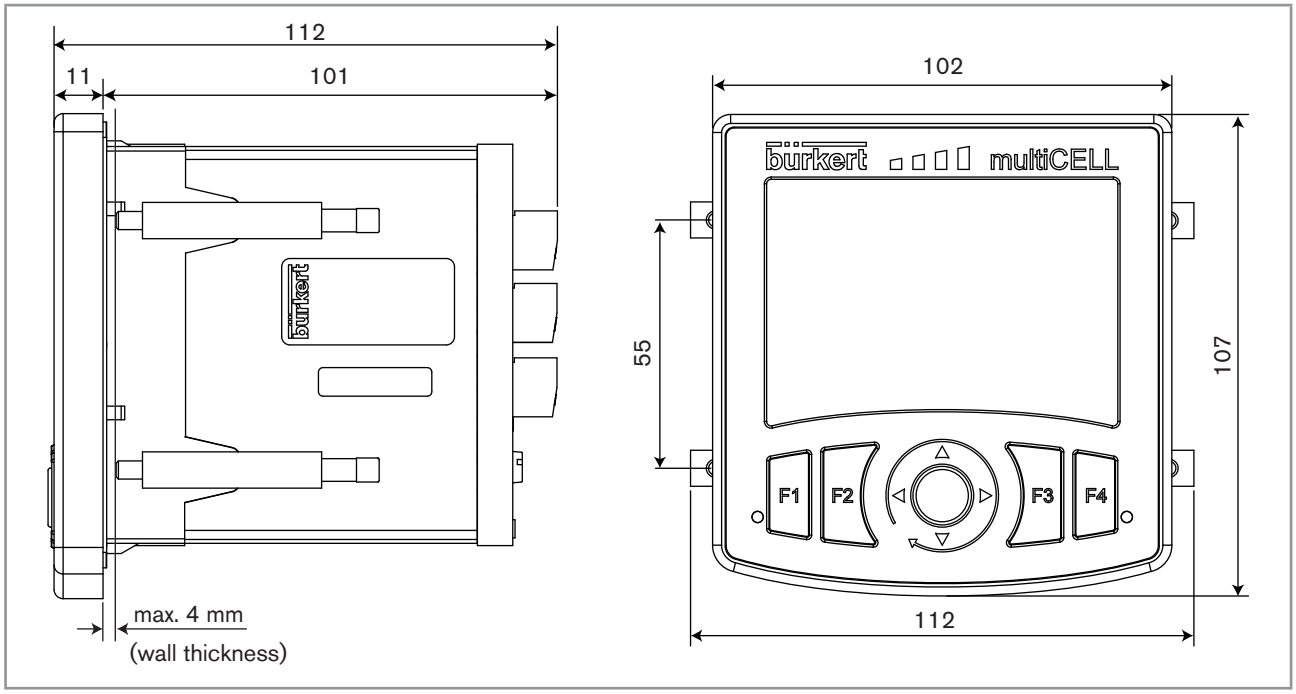

Fig. 3: Dimensions of the multiCELL [mm]

6.3.2. Specifications of the "M0:MAIN" board

Power supply	12-36 VDC, filtered and regulated
Specifications of the power source (not provided) of UL-recognised devices, with variable key PE72	▪ Limited power source (in accordance with chap. 9.3 of the UL 61010-1 standard) ▪ or class 2 type power source (according to the 1310/1585 and 60950-1 standards)
Max. power consumption (without additional module, outputs not connected)	1.5VA

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Power distribution ("PWR OUT")	12-36 VDC, 1.8A max.
All digital inputs ("DI")	▪ Voltage: 5-36VDC ▪ Input impedance: 3kΩ ▪ Galvanically insulated ▪ Protected against polarity reversal and voltage spikes ▪ Frequency: 0.5 to 2500Hz
All analogue outputs ("AO")	▪ 4-20mA current ▪ Any connection mode, in sink or source mode ▪ Galvanically insulated ▪ Protected against polarity reversal ▪ Max. loop impedance: 1100Ω at 36VDC, 610Ω at 24VDC, 100Ω at 12VDC
All digital outputs ("DO")	▪ Transistor ▪ Connection mode unimportant in NPN or PNP mode ▪ Galvanically insulated ▪ Protected against short circuits ▪ Max. voltage: 36VDC ▪ max. 700mA if one transistor is connected but max. 1A for both transistors connected ▪ Max. frequency: 2000Hz
Electrical connection	▪ Per detachable 21-point set-screw connector, orange ▪ Refer to chap. *6.3.7* for the specifications of the connection cables
Flow rate measurement (software option)	Refer to the user manual for the flow sensor connected to the 8619

6.3.3. Specifications of the memory card reader/recorder

▪ Memory card type	▪ SD (Secure Digital); Do not use SDHC cards.
▪ Capacity	▪ 2 Go max.
▪ File system	▪ FAT16

6.3.4. Specifications of the "pH/redox" module

Measurement of the oxidation reduction potential	
▪ Oxidation reduction potential measurement range	▪ -2000 ... +2000mV
▪ Resolution of the potential difference measurement	▪ 0.1mV
▪ Accuracy of potential difference measurement	▪ 1mV
▪ Oxidation reduction potential probe type	▪ Electrochemical

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pH measurement	
▪ pH measurement range	▪ -2.00...+16.00
▪ Resolution of pH measurement	▪ 0.01pH
▪ Accuracy of pH measurement	▪ 0.02pH
▪ Potential difference measurement range	▪ -600...+600mV
▪ Resolution of potential difference measurement	▪ 0.1mV
▪ Accuracy of potential difference measurement	▪ 1mV
▪ pH probe type	▪ Electrochemical
Current consumption	0.1VA
Temperature measurement	
▪ Measurement range	▪ -25°C ... +130°C
▪ Measurement resolution	▪ 0.1°C
▪ Measurement accuracy	▪ 1°C
▪ Temperature sensor type	▪ Pt100 or Pt1000, with 2 or 3 wires
Electrical connection	▪ Per detachable 9-point set-screw connector, grey ▪ Refer to chap. *6.3.7* for the specifications of connection cables

6.3.5. Specifications of the "COND" conductivity module

Conductivity measurement	
▪ Measurement range	▪ 0.000 µS/cm...2000 mS/cm
▪ Measurement resolution	▪ 10^{-9}S/cm
▪ Measurement error	▪ < 0.5% of measured value + sensor error
▪ Conductivity cell type	▪ With 2 or 4 electrodes; the specifications of Bürkert cells are described in the relevant manual.
Resistivity measurement	
▪ Measurement range	▪ 0.500Ωcm...2.000MΩ/cm
▪ Measurement resolution	▪ 10^{-1}Ωcm
▪ Measurement error (without sensor)	▪ < 0.5% of measured value
Current consumption	0.25VA
Temperature measurement	
▪ Measurement range	▪ -40°C ... 200°C
▪ Measurement resolution	▪ 0.1°C
▪ Measurement error	▪ 1°C
▪ Temperature sensor type	▪ Pt100 or Pt1000, with 2 or 3 wires
Electrical connection	▪ Per detachable 9-point set-screw connector, green ▪ Refer to chap. *6.3.7* for the specifications of the connection cables

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6.3.6. Specifications of the additional "OUT" outputs board

Current consumption	0.1VA
All digital outputs ("DOx")	▪ Transistor ▪ Any connection mode, in NPN or PNP mode ▪ Galvanically insulated ▪ Protected against short circuits ▪ Max. voltage: 36VDC ▪ max. 700mA per transistor but max. 1A if both transistors are connected ▪ Max. frequency 2000Hz
All analogue outputs ("AOx")	▪ 4-20mA current ▪ Any connection mode, in sink or source mode ▪ Galvanically insulated ▪ Protected against polarity reversal ▪ Max. loop impedance: 1100Ω at 36VDC, 610Ω at 24VDC, 100Ω at 12VDC
Electrical connection	▪ Per detachable 9-point set-screw connector, black ▪ Refer to chap. *6.3.7* for the specifications of the connection cables

6.3.7. Specifications of the connection cables

▪ Use shielded cables for the electrical connection.
▪ Be sure to use cables in which the wires present the specifications described in the table below.

Wire specifications	Dimensions of the max. clamping area
▪ Single core H05(07) V-U	0.2...1.5 mm²
▪ Flexible wire H05(07) V-K	0.2...1.5 mm²
▪ With non-insulated end connection	0.2...1.5 mm²
▪ With insulated end connection	0.2...0.75 mm²

Table 1 : Specifications of the wires making up the connection cables

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7. INSTALLATION AND WIRING

7.1. Safety instructions

DANGER

Risk of injury due to electrical discharge.

- Shut down and isolate the electrical power source before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

WARNING

Risk of injury due to non-conforming installation.

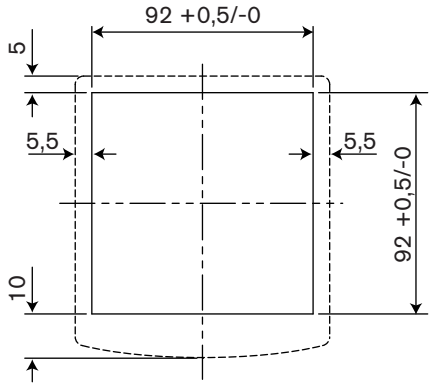
- Electrical installation can only be carried out by qualified and authorised personnel with the appropriate tools.
- Install appropriate safety devices (correctly rated fuse and/or circuit-breaker).
- The use of probes/sensors sold by Bürkert is preferable.
- Follow the instructions on installation and wiring of remote sensors connected to the multiCELL.

Risk of injury due to unintentional switch on of power supply or uncontrolled restarting of the installation.

- Take appropriate measures to avoid unintentional activation of the installation.
- Guarantee a set or controlled restart of the process subsequent to the installation of the device.

7.2. Building the device into a housing or cabinet

→ Follow the instructions below to build the multiCELL delivered fully assembled, into a housing or cabinet.

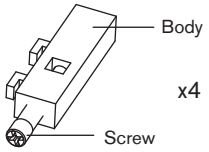


This diagram is not to scale. The dimensions are given in mm.

Stage 1:

→ Check that the thickness of the door of the housing or cabinet is 4 mm max.

→ Cut out the hole in the door of the electrical housing or cabinet in accordance with the standard, IEC 61554:1999 (DIN 43700), allowing the space required around the cut-out and inside the cabinet to easily handle the 4 locking systems, delivered with the multiCELL.



Stage 2:

Prepare the 4 locking systems:

→ Insert a screw into each device.

→ Tighten the screw until the end of the shaft of the screw is flush with the device.

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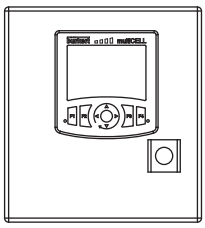
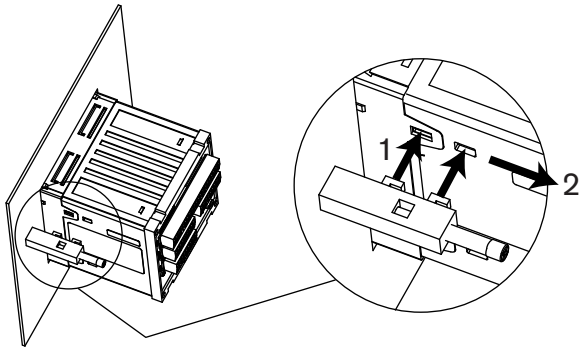
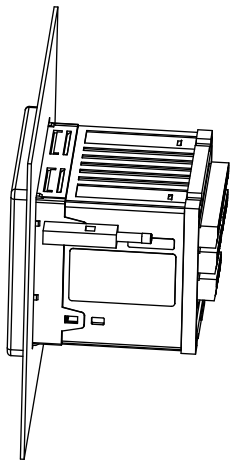
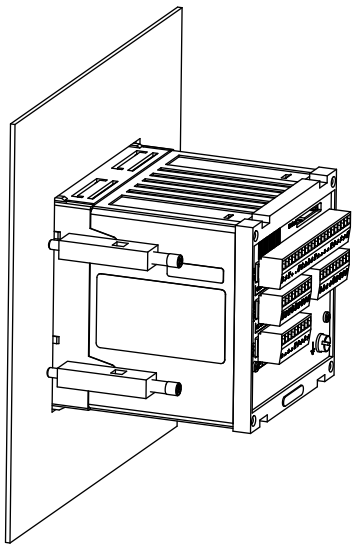
	Stage 3: → Slide the housing into the cut-out with the connectors to the back until it can go no further.
	Stage 4: → Insert (1) the hooks on the first locking system into the slots on the housing. → Pull the locking system (2) until you hear a click. The click may be heared when tightening the locking system at stage 6.
	Stage 5: → Place the locking system flush against the multiCELL by hand, so that the hooks remain in place.
	Stage 6: → Fully tighten the screws using an appropriate screwdriver. → Repeat stages 4 to 6 to fit the other 3 locking systems.

Fig. 4: Insertion of the 8619 into a housing or cabinet

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7.3. Electrical wiring

DANGER

Risk of injury due to electrical discharge.

- Shut down and isolate the electrical power source before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

- **Use a high quality electrical power supply (filtered and regulated).**
- **Connect the functional earth on the installation to the ground screw on the device (see** *Fig. 1***)**
- **Connect the shielding on each wire to an "FE" (functional earth) terminal to guarantee the equipotentiality of the installation.**
- **Use shielded cables that respect the specifications described in** *Table 1 : Specifications of the wires making up the connection cables*

7.3.1. Electrical connections

For all versions of the multiCELL, the electrical connection is made by set-screw connectors.

7.3.2. Wiring the M0:MAIN board

The M0:MAIN board is used to connect the multiCELL's electrical power source. It has:

- 2 digital inputs (marked DI1 and DI2), for connecting a flow sensor for example
- Two 4-20 mA analogue outputs (marked AO1 and AO2)
- 2 digital outputs (marked DO1 and DO2)

The inputs and outputs are galvanically insulated and therefore voltage free.

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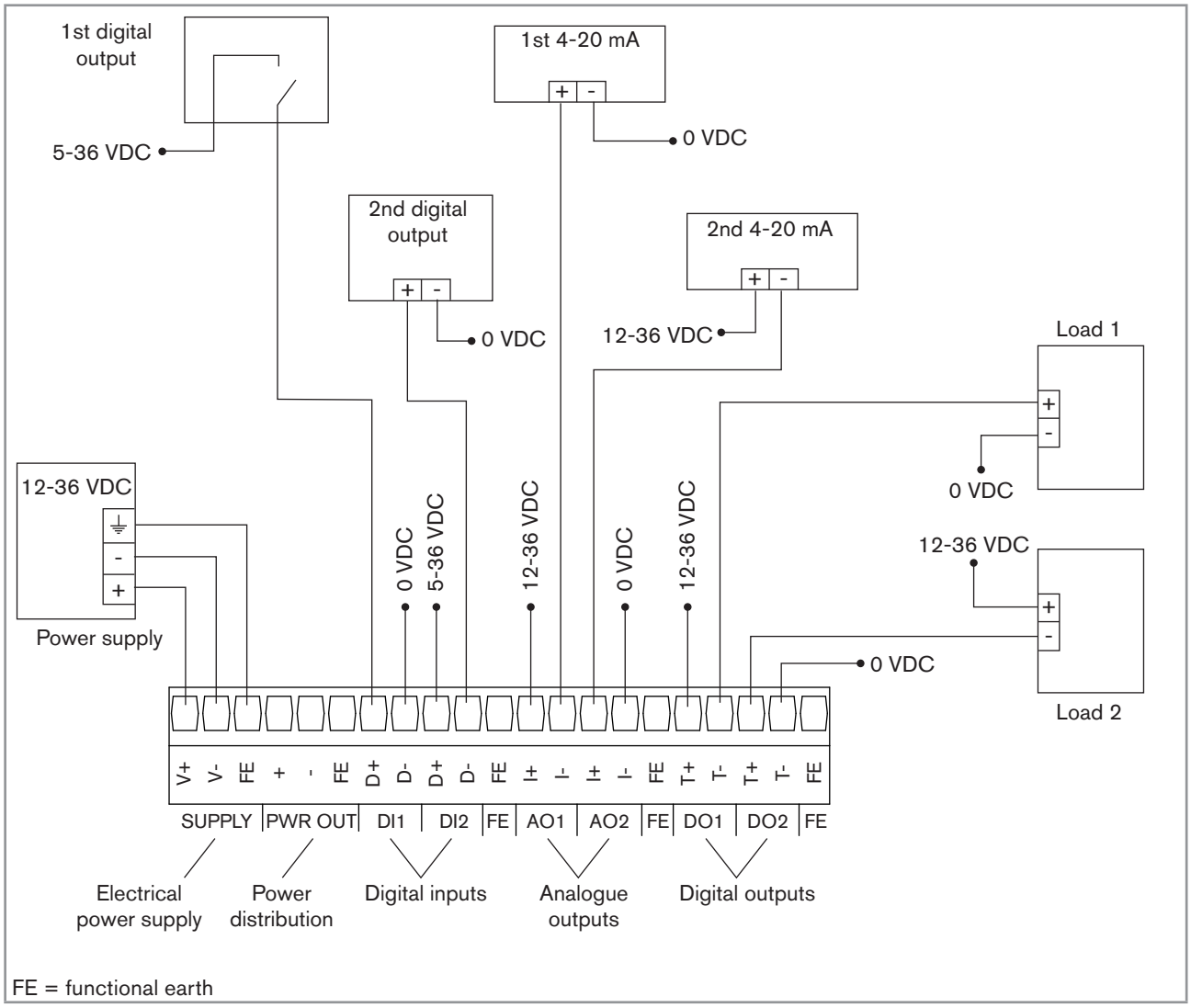

Fig. 5: Wiring of the "M0:MAIN" board

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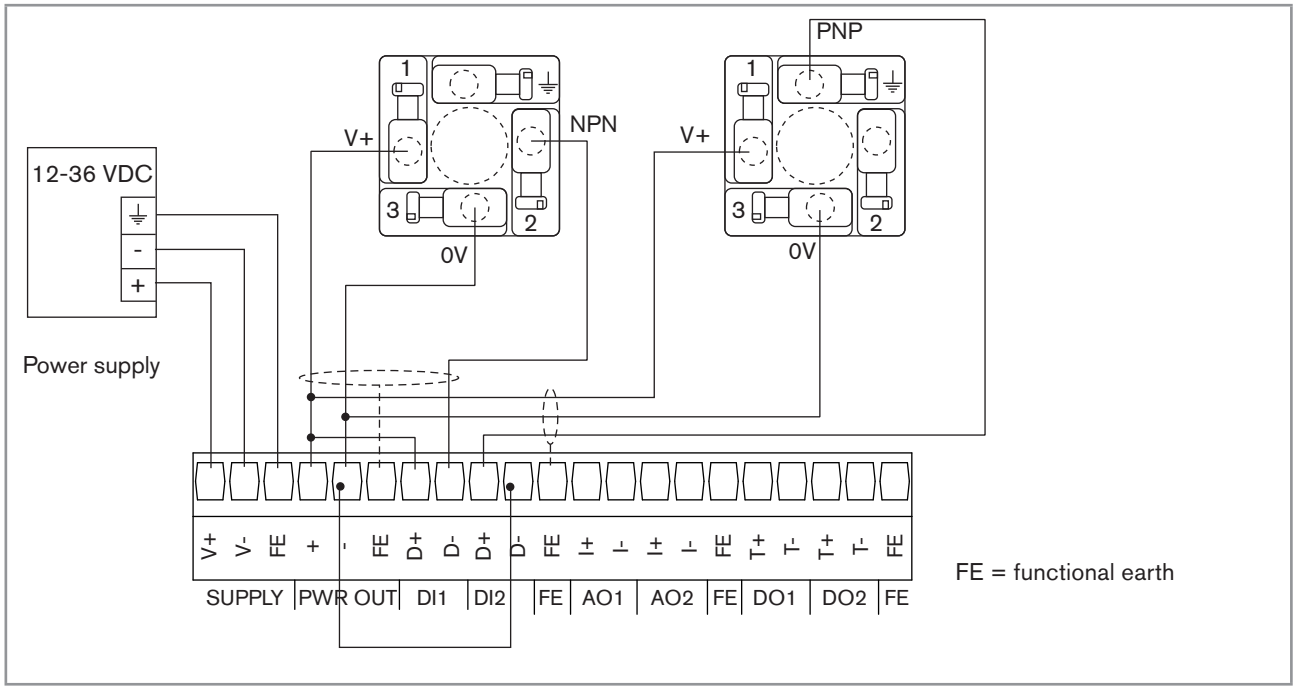


Fig. 6: Connection example for the 8619 with two flow sensors, type 8030

7.3.3. Wiring the "OUT" outputs module

Wiring the "OUT" outputs module:

- Two 4-20 mA analogue outputs (marked AO1 and AO2);
- Two digital outputs (marked DO1 and DO2).

The outputs are galvanically insulated, and therefore voltage free.

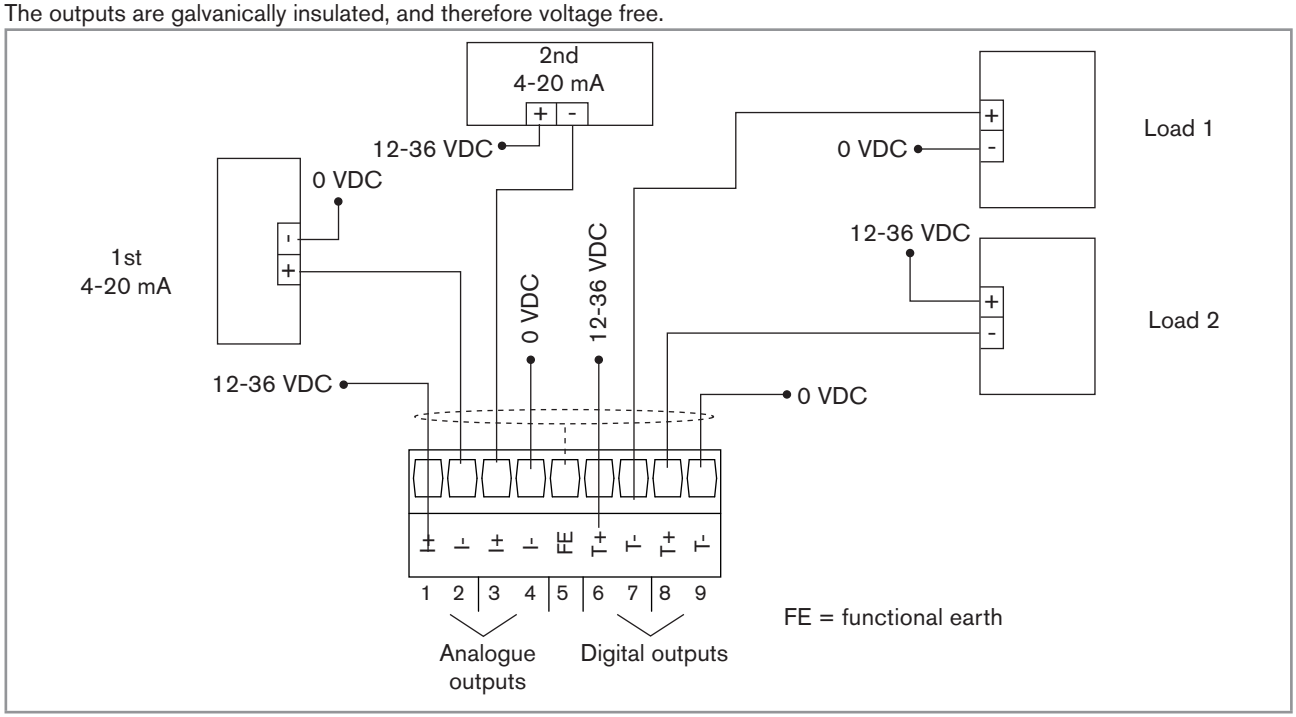
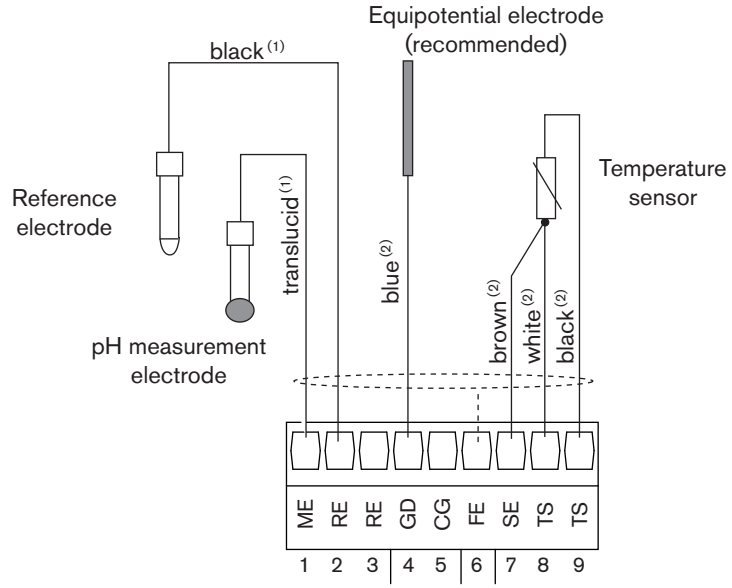


Fig. 7: Wiring the "OUT" outputs module

7.3.4. Wiring the "pH/ORP" module

- Wire a pH/redox sensor in symmetrical mode to obviate the influence of interference and, in this case, wire the equipotential electrode (compulsory).
- When the pH/redox sensor is wired in asymmetrical mode, measurement of the pH or the oxidation reduction potential may drift over time when the equipotential electrode is not wired.

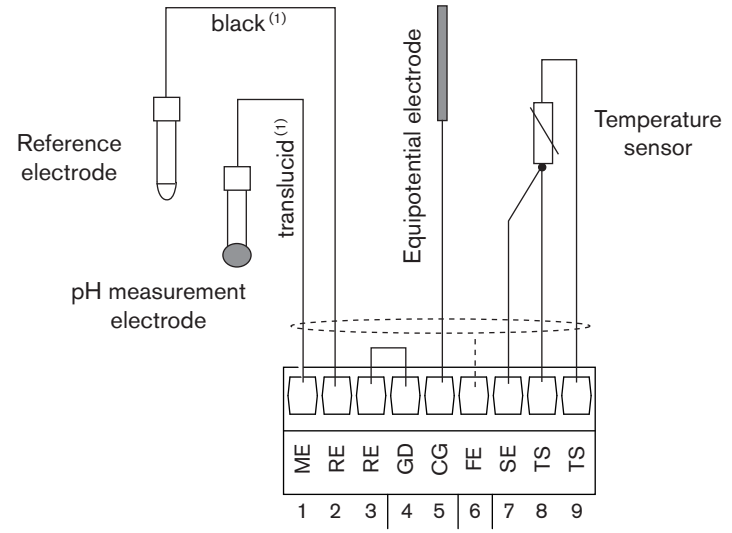


FE = functional earth

(1) Colour of the wires in Bürkert connection cables for order codes 561904, 561905 or 561906.

(2) Colour of the wires in the Pt1000 sensor for order code 427023 and its Bürkert connection cable for order code 427113.

Fig. 8: Wiring a Bürkert 8200 type sensor and a Pt1000 temperature sensor in symmetrical mode



FE = functional earth

(1) Colour of the wires in Bürkert connection cables for order codes 561904, 561905 or 561906.

Fig. 9: Wiring a pH sensor and a Pt100 or Pt1000 temperature sensor in asymmetrical mode to a pH/ORP module

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Wire colour	signal
translucid	pH sensor
red (coax cable shielding)	reference electrode
blue	rhodium electrode
green/yellow	cable shielding
grey	sensor body
green	Pt1000
white	Pt1000

FE = functional earth

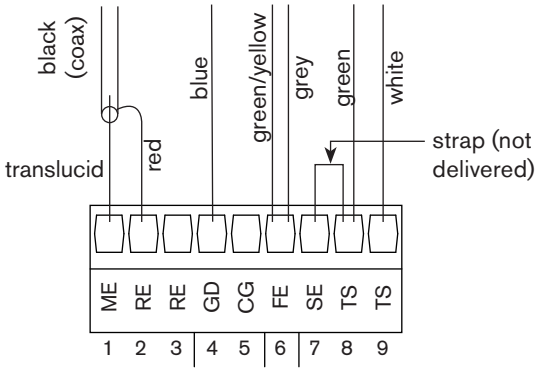

Fig. 10: Wiring a Bürkert 8201 type sensor with integrated Pt1000 temperature sensor in symmetrical mode using a Variopin connection cable with order code 554856 or 554857

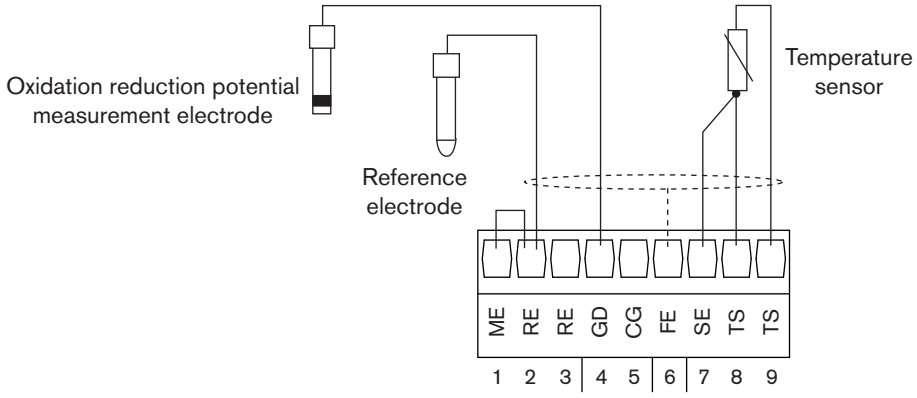
Oxidation reduction potential measurement electrode
Reference electrode
Temperature sensor
ME RE RE GD CG FE SE TS TS
1 2 3 4 5 6 7 8 9
FE = functional earth

Fig. 11: Wiring an oxidation reduction potential sensor and a Pt100 or Pt1000 temperature sensor in a pH/ORP module

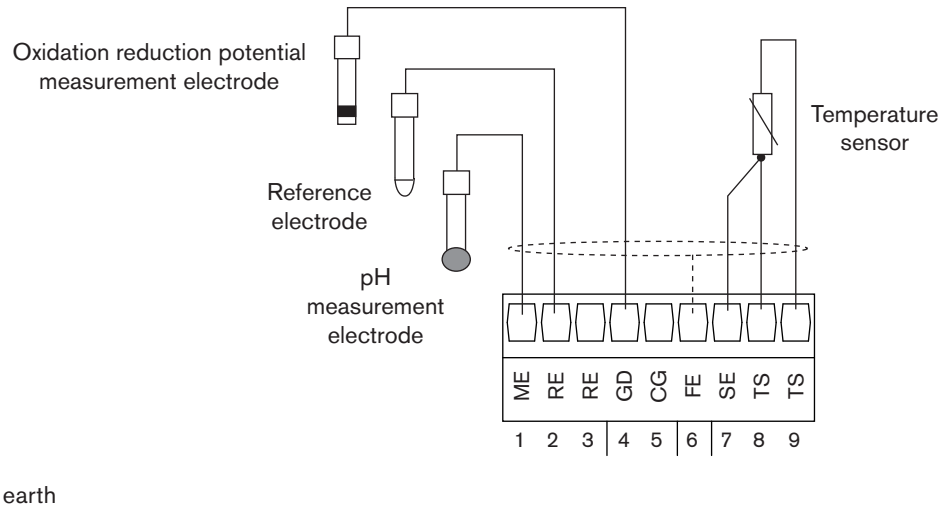
Oxidation reduction potential measurement electrode
Reference electrode
pH measurement electrode
Temperature sensor
ME RE RE GD CG FE SE TS TS
1 2 3 4 5 6 7 8 9
FE = functional earth

Fig. 12: Wiring a pH sensor, an oxidation reduction potential sensor and a Pt100 or Pt1000 temperature sensor in a pH/ORP module

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7.3.5. Wiring the "COND" conductivity module

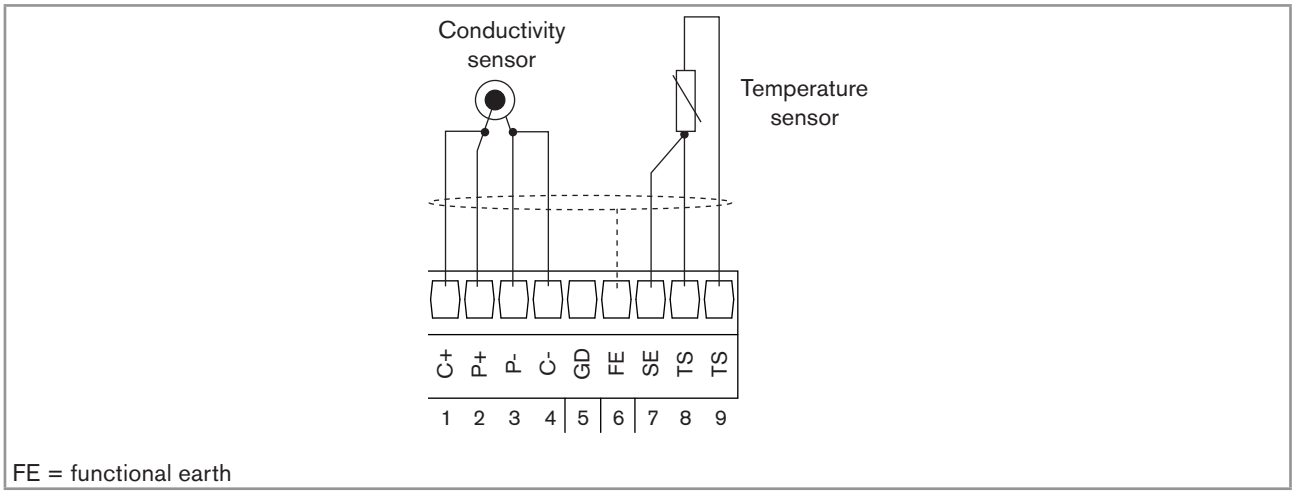

Fig. 13: Wiring a resistive conductivity cell with 2 electrodes and a Pt100 or PT100 temperature sensor in a conductivity module

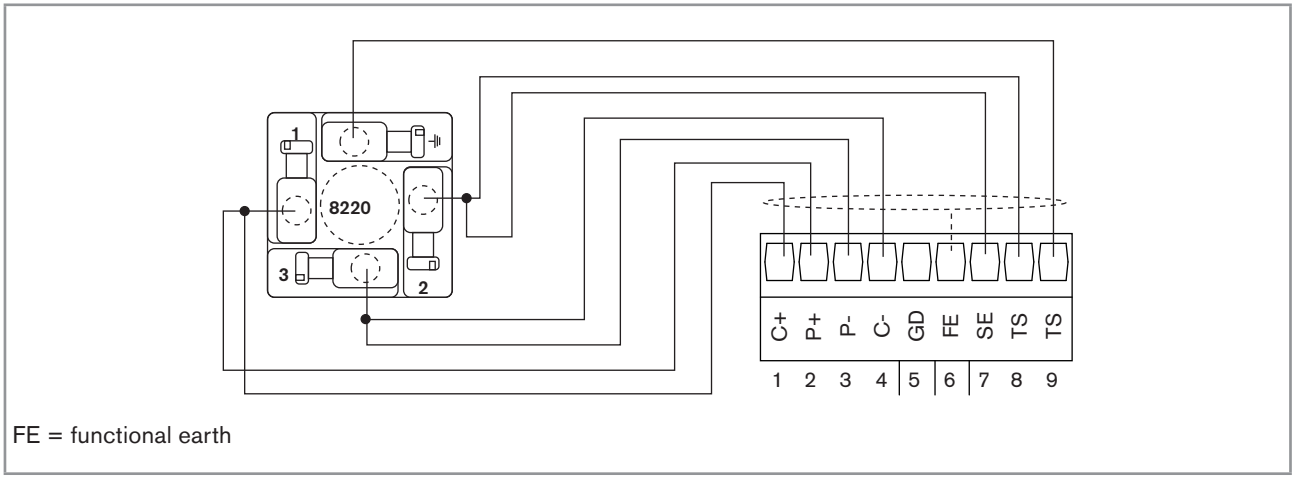

Fig. 14: Connection example for a 8220 conductivity sensor

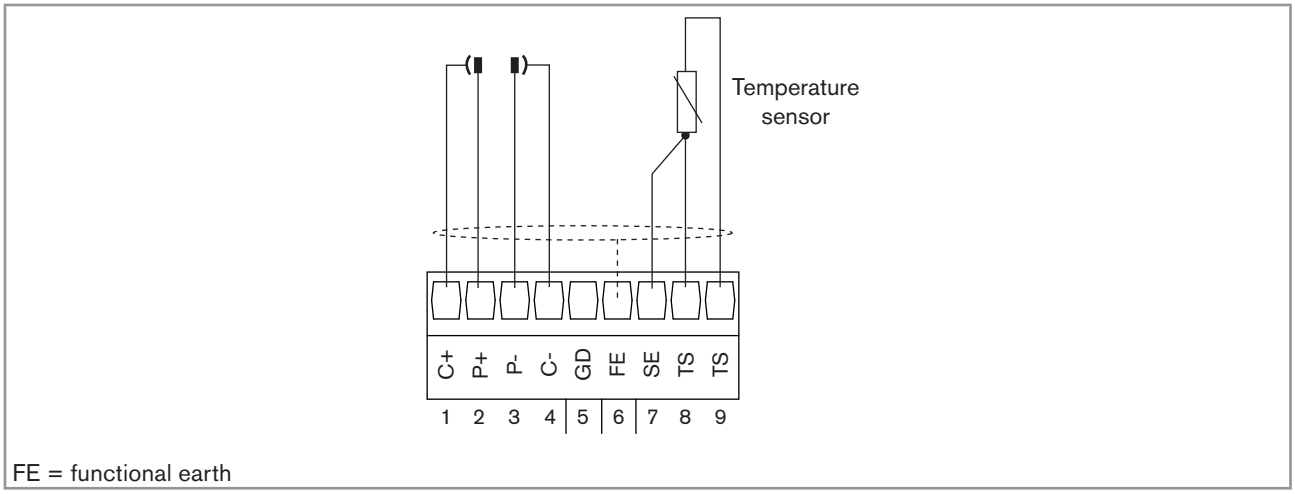

Fig. 15: Wiring a resistive conductivity cell with 4 electrodes and a Pt100 or PT100 temperature sensor in a conductivity module

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8. COMMISSIONING

8.1. Safety instructions

WARNING

Danger due to non-conforming commissioning.

Non-conforming commissioning could lead to injuries and damage the device and its surroundings.

- Before commissioning, make sure that the staff in charge have read and fully understood the contents of the manual.
- In particular, observe the safety recommendations and intended use.
- The device/installation must only be commissioned by suitably trained staff.

Protect this device against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of the climatic conditions.

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9. ADJUSTMENT AND FUNCTIONS

9.1. Safety instructions

WARNING

Risk of injury due to non-conforming adjustment.

Non conforming adjustment could lead to injuries and damage the device and its environment.

- The operators in charge of adjustment must have read and understood the contents of this manual.
- In particular, observe the safety recommendations and intended use.
- The device/installation must only be adjusted by suitably trained staff.

9.2. Functions

The device has 2 modes of use:

Read mode

See chap. *9.7* for the description of Read mode.

Configuring Mode

This mode comprises 5 menus:

Menu title	Relevant icon
"Parameters"	
"Calibration"	
"Diagnostics"	
"Tests"	
"Information"	

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9.3. Using the navigation button and the dynamic keys

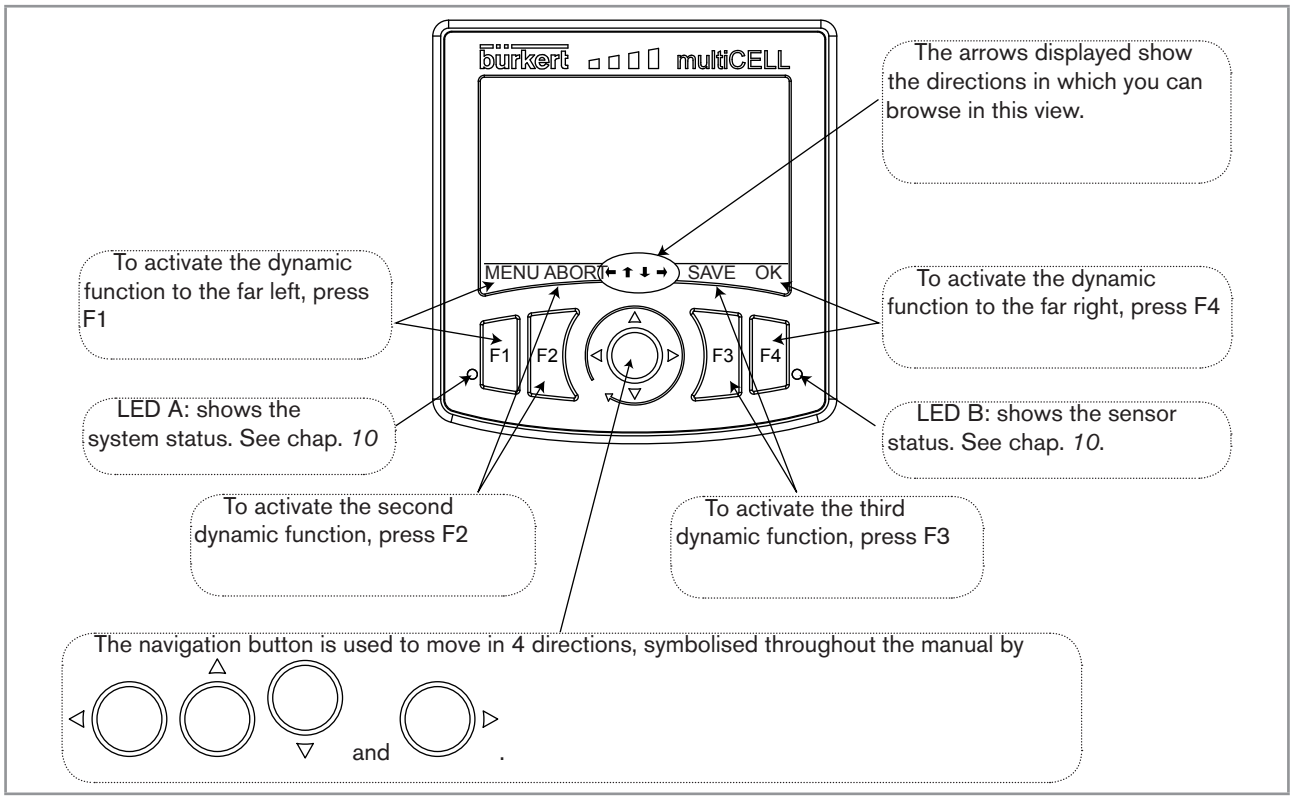
bürkert multiCELL
The arrows displayed show the directions in which you can browse in this view.
To activate the dynamic function to the far left, press F1
MENU ABOR SAVE OK
F1 F2 F3 F4
To activate the dynamic function to the far right, press F4
LED A: shows the system status. See chap. 10
LED B: shows the sensor status. See chap. 10.
To activate the second dynamic function, press F2
To activate the third dynamic function, press F3
The navigation button is used to move in 4 directions, symbolised throughout the manual by
and .

Fig. 16: Using the navigation button and the dynamic keys

You want to...	Press...
....access the Configuring mode	Dynamic function, "MENU", from any view in Read mode
...go back to Read mode	Dynamic function, "MEAS"
...access the menu displayed	Dynamic function, "OK"
...access the highlighted function	Dynamic function, "OK"
...confirm the enter	Dynamic function, "OK"
...save modifications	Dynamic function "SAVE"
...go back to the parent menu	Dynamic function "BACK"
...cancel the current operation	Dynamic function "ABORT"
...set a setpoint value	Dynamic function "SETP"
...activate manual mode in a configured and activated function	Dynamic function "MANU"
...manually set the percentage of the function	Dynamic function "CMD"
...force the result of a function to 0%	Dynamic function "0%"
...force the result of a function to 100%	Dynamic function "100%"
...activate automatic mode in a configured and activated function	Dynamic function "AUTO"
...start teach-in	Dynamic function "START"
...end teach-in	Dynamic function "END"
...answer the question asked in the affirmative	Dynamic function "YES"
...answer the question asked in the negative	Dynamic function "NO"
...select the highlighted character or mode	Dynamic function "SEL"

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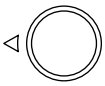
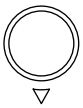
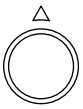
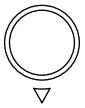
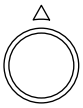
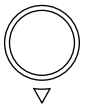
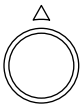
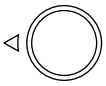
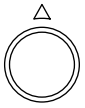
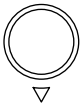
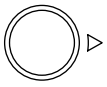
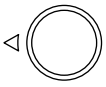
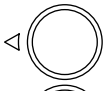
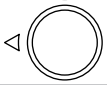
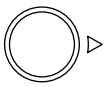
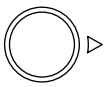
You want to...	Press...			
...browse in Read mode	next view	 previous view	 next level	 previous level
...browse in the Configuring mode menus	 display the next menu		 display the previous menu	
...browse in the menu functions	 highlight the next function		 highlight the previous function	
...set the contrast or brightness percentage for the display (after accessing the function in the "Parameters" menu)	increase the percentage		 reduce the percentage	
...modify a numerical value or the units	 increment the figure selected or modify the units		 decrement the figure selected or modify the units	
	 select the next figure		 select the previous figure	
...allocate the "+" or "-" sign to a numerical value	 to the extreme left of the numerical value then  until the desired sign is displayed			
...move the decimal point in a numerical value	 to the extreme right of the numerical value then  until the decimal point is in the desired place			

9.4. Modifying a name

This chap. describes how to use the keyboard displayed to modify the name of a process variable (13 characters max.), a function (12 characters max.) or the title of a view (12 characters max.).

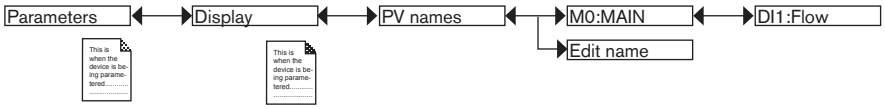
To retrieve the original name, even after modification and saving:

→ edit the new name

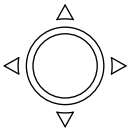
→ delete all the characters using one of the methods described on p. *27*.

Example: rename a variable (choose one of the variables suggested).

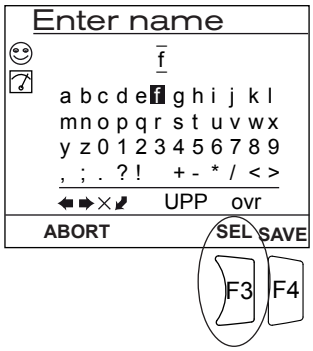
Refer to chap. *9.8* to access Parameters menu.



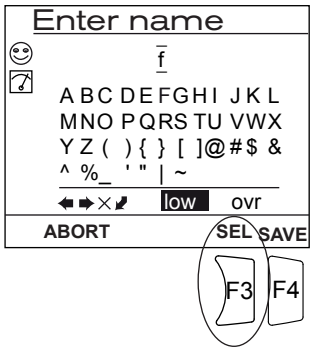
→ Place the cursor over the desired letter, using the navigation button:



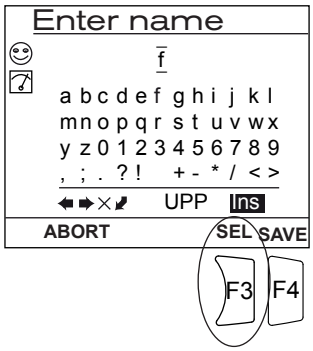
→ Select the highlighted letter by pressing the key F3 (function "SEL"):



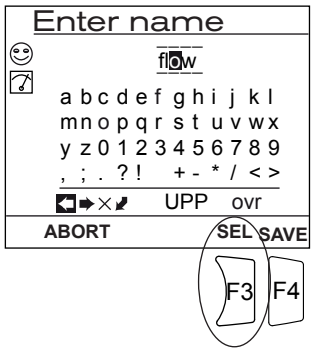
→ Display the capital letters and different signs by placing the cursor over "UPP" then pressing the key F3 (function "SEL"):



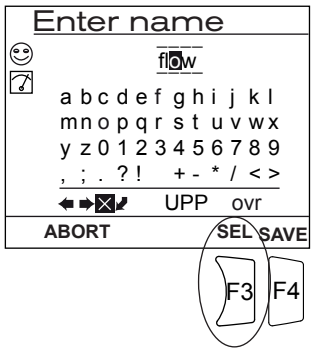
→ By default, the "character insertion" ("Ins") mode is activated; to activate the "character overwrite" mode, place the cursor over "ovr" then press the key F3 (function "SEL"):



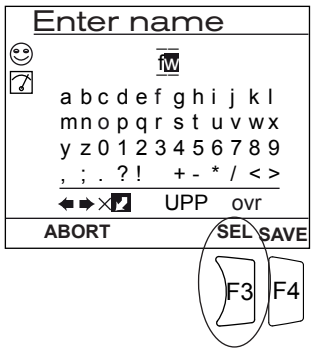
→ to select a character in the entered name, place the cursor over the arrows ◄ or ► and press the key F3 (function "SEL"):



→ to delete the character selected in the entered name, place the cursor over × and press the key F3 (function "SEL"):



→ to delete the character preceding the character selected in the entered name, place the cursor over and press the key F3 (function "SEL"):



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9.5. Entering a numerical value

- Access, for example, the manual calibration function for a conductivity sensor. Refer to chap. *9.8* to access "Calibration" menu.

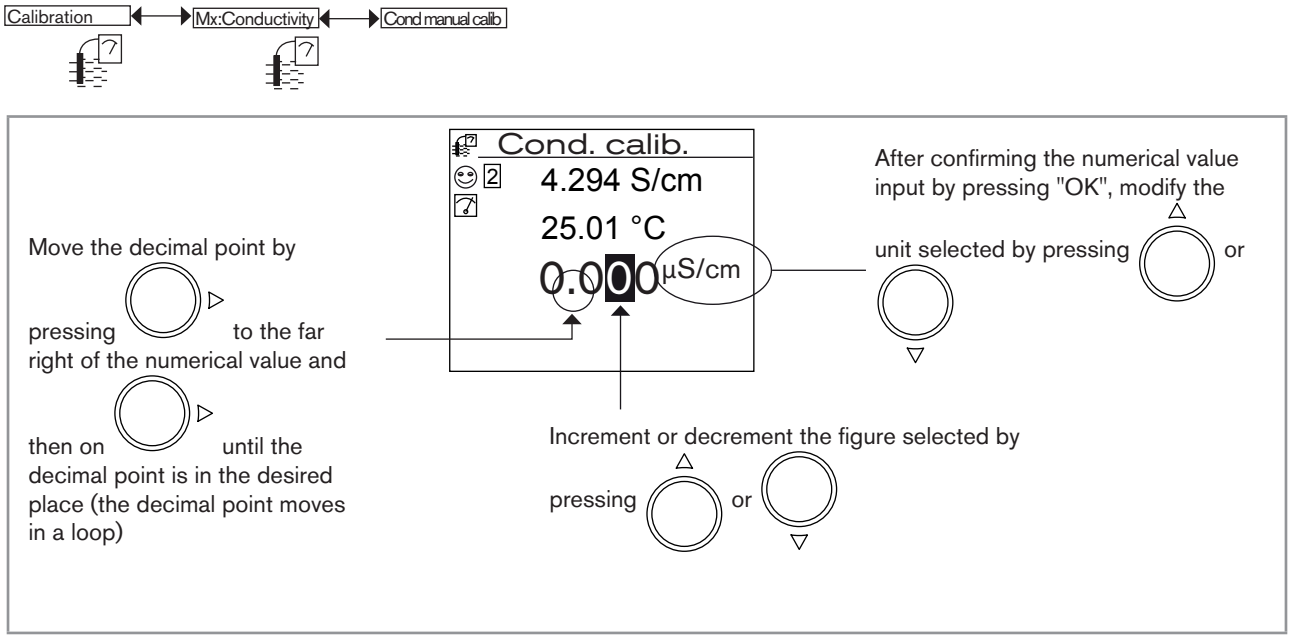
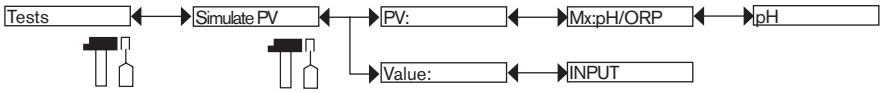

Calibration
Mx:Conductivity
Cond manual calib
Cond. calib.
4.294 S/cm
25.01 °C
0.000 µS/cm
Move the decimal point by pressing to the far right of the numerical value and then on until the decimal point is in the desired place (the decimal point moves in a loop)
After confirming the numerical value input by pressing "OK", modify the unit selected by pressing or
Increment or decrement the figure selected by pressing or

Fig. 17: Example of a numerical value entering

- Access, for example, the pH value simulation function. Refer to chap. *9.8* to access "Tests" menu.



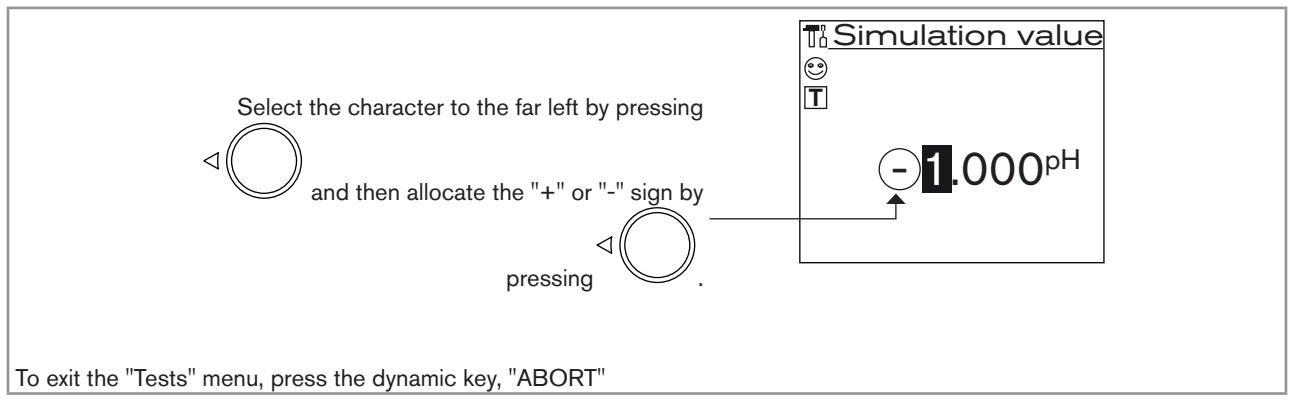

Simulation value
T
-1.000pH
Select the character to the far left by pressing
and then allocate the "+" or "-" sign by pressing .
To exit the "Tests" menu, press the dynamic key, "ABORT"

Fig. 18: Changing the sign of a numerical value

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9.6. Description of the display

9.6.1. Description of the icons

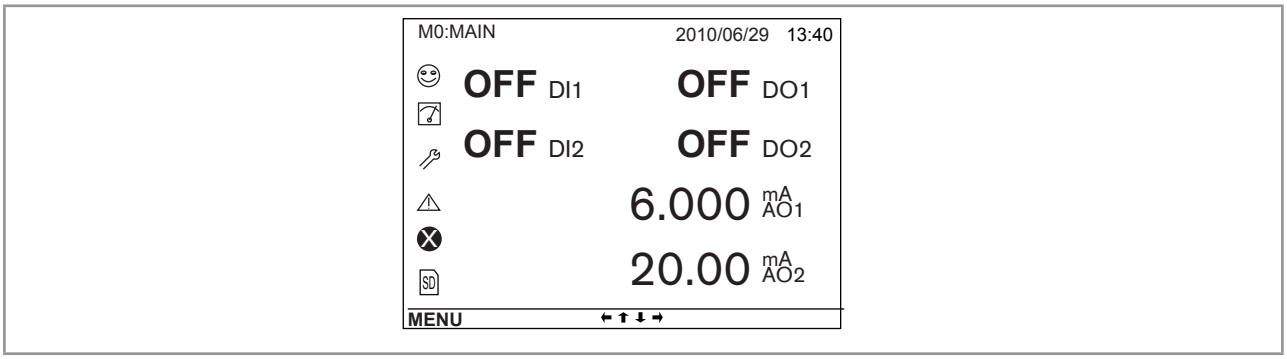

Fig. 19: Position of the icons

Icon	Meaning and alternatives
	Default icon when process monitoring is not activated via the "Diagnostics" menu; if monitoring is activated, this icon indicates that the parameters monitored are not out of range. If monitoring of the electrodes and/or the fluid temperature and/or the fluid conductivity are activated, the alternative icons in this position are: ▪ , combined with : see chap. *10.3* ▪ , combined with : see chap. *10.3*
	Device currently measuring. The alternative icons in this position are: ▪ H flashing: HOLD mode activated ▪ T flashing: running check that an output is working and behaving correctly
	"Maintenance" event: see chap. *10.3*
	"Warning" event: see chap. *10.3*
	"Error" event: see chap. *10.3*
	Memory card inserted. The alternative to this position is the icon indicating a memory card error.

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9.6.2. Switching on the device for the first time

When switching on the device for the first time, the display shows the first view in READ mode:

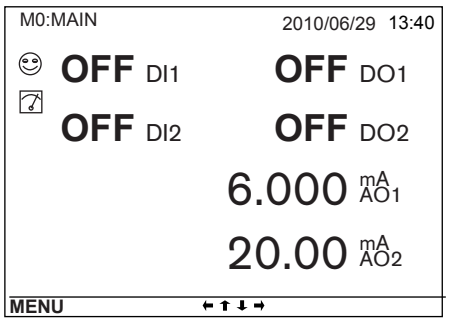

Fig. 20: Display when switching on for the first time

When switched on subsequently, the last active view in the Read menu is displayed. See chap. 9.7 to browse in all views in Read mode.

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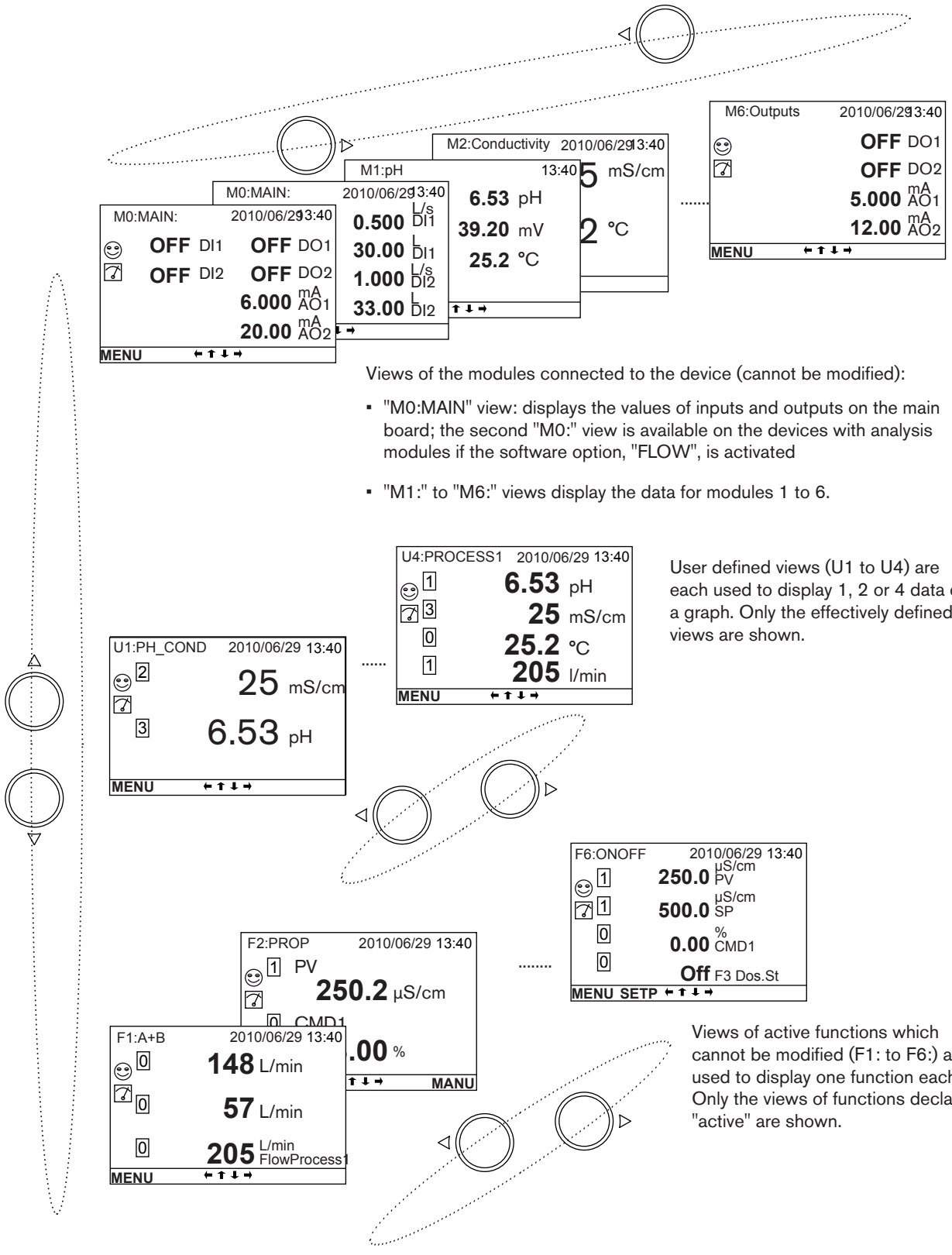
9.7. Read mode



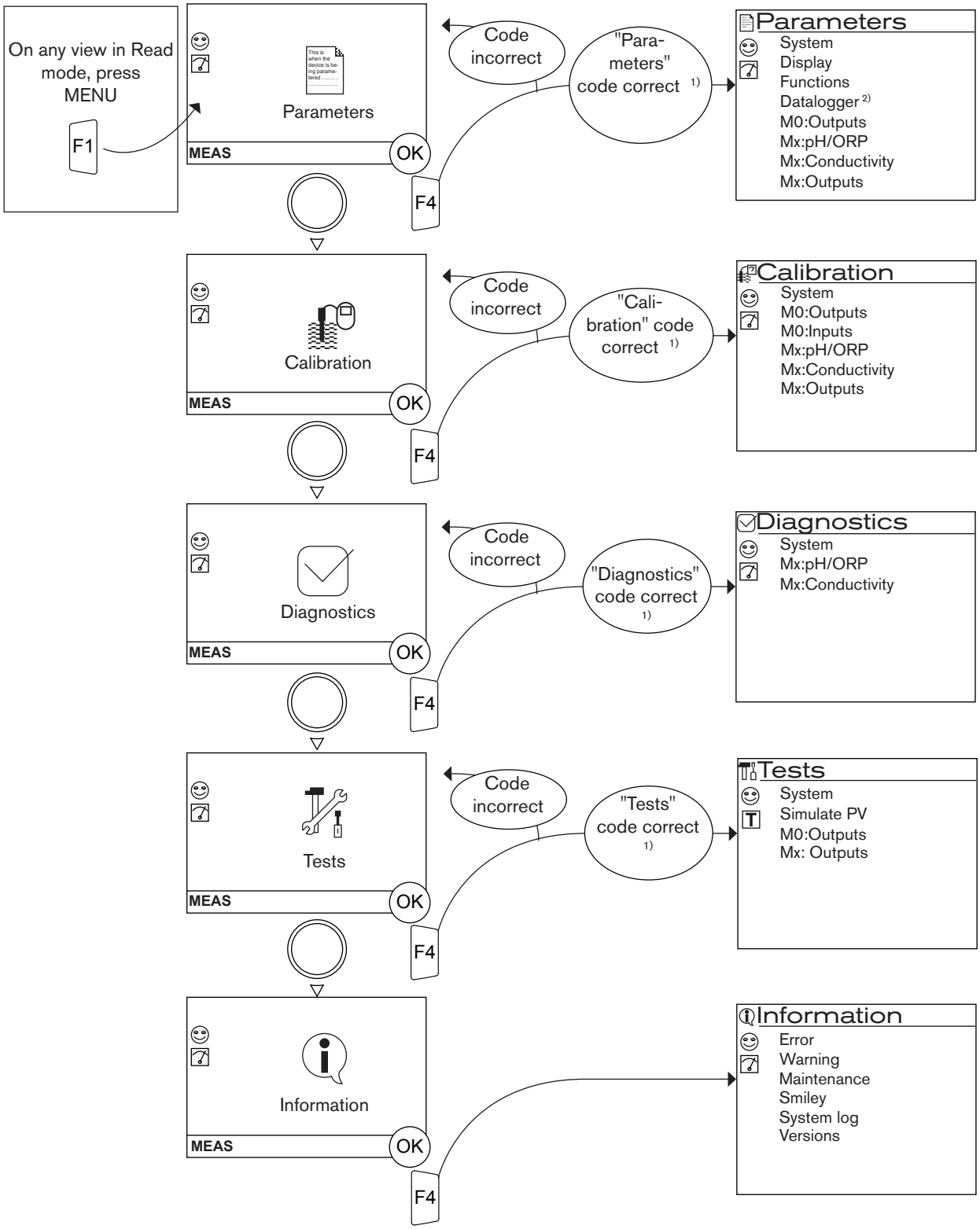
Views of the modules connected to the device (cannot be modified):

- "M0:MAIN" view: displays the values of inputs and outputs on the main board; the second "M0:" view is available on the devices with analysis modules if the software option, "FLOW", is activated
- "M1:" to "M6:" views display the data for modules 1 to 6.

User defined views (U1 to U4) are each used to display 1, 2 or 4 data or a graph. Only the effectively defined views are shown.

Views of active functions which cannot be modified (F1: to F6:) are used to display one function each. Only the views of functions declared "active" are shown.

9.8. Configuring mode access



[1] The code is not requested if the default code "0000" is used.

[2] This menu is available as an option.

→ See chap. *9.14* for details of the functions per menu

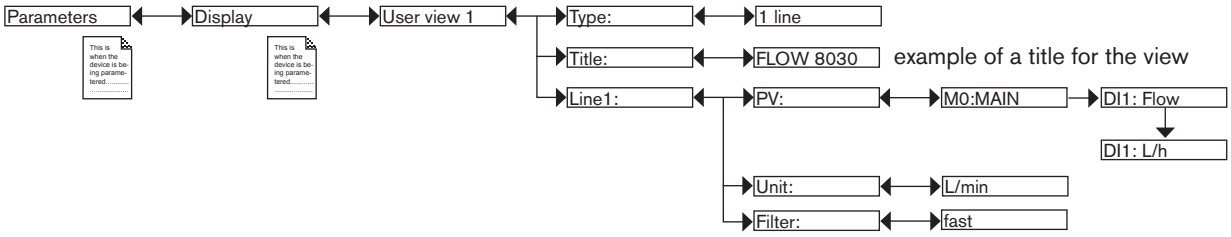
9.9. Example for configuring a flow sensor

The "Flow" function is available on devices with an analysis module if the "FLOW" software option is activated.

Example of a flow sensor type 8030 (fitted with a DN15 PVC S030 fitting) connected to the DI1 input of the multiCELL 8619.

9.9.1. Customising the User view 1 to display the measured flow rate

Refer to chap. *9.8* to access Parameters menu.



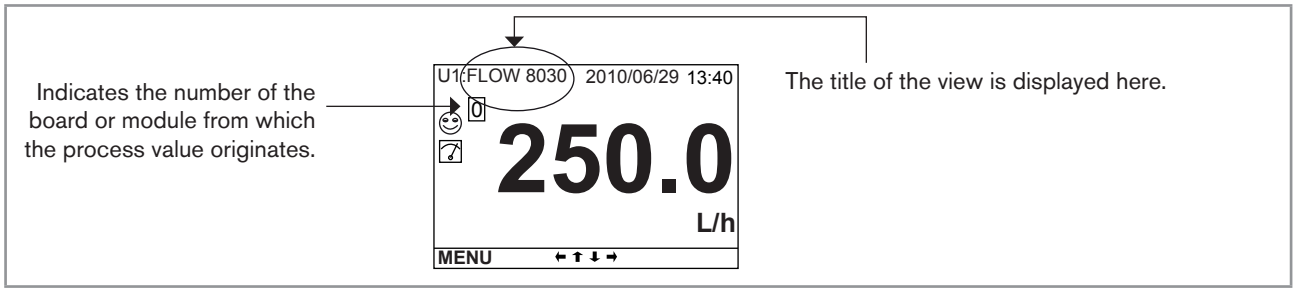
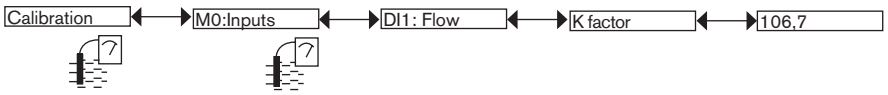


Fig. 21: Display of the flow rate measured by the flow sensor 8030 in the customized view "U1"

9.9.2. Entering the K factor of the fitting used

Refer to chap. *9.8* to access Calibration menu.



→ Always enter the K factor in pulse/litre (refer to the instruction manual of the fitting used).

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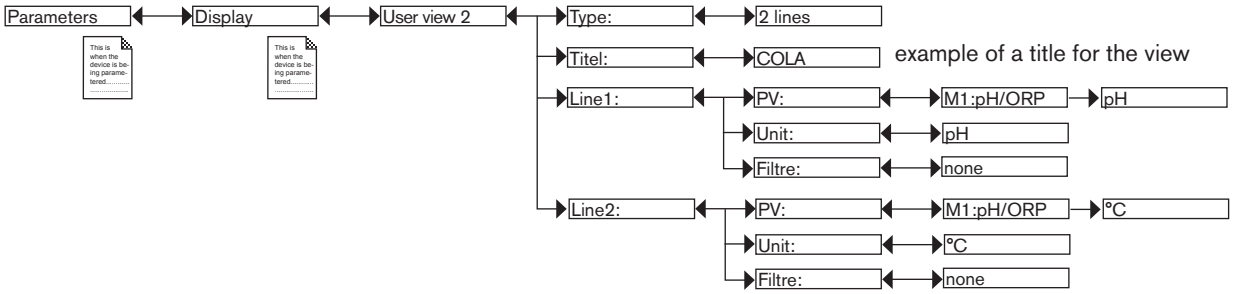
9.10. Example for configuring a pH sensor

Example of a pH sensor and a Pt1000 temperature sensor both connected to the M1 module of the multiCELL 8619.

9.10.1. Customising the User view 2 to display both measured pH and temperature values

Refer to chap. *9.8* to access Parameters menu.



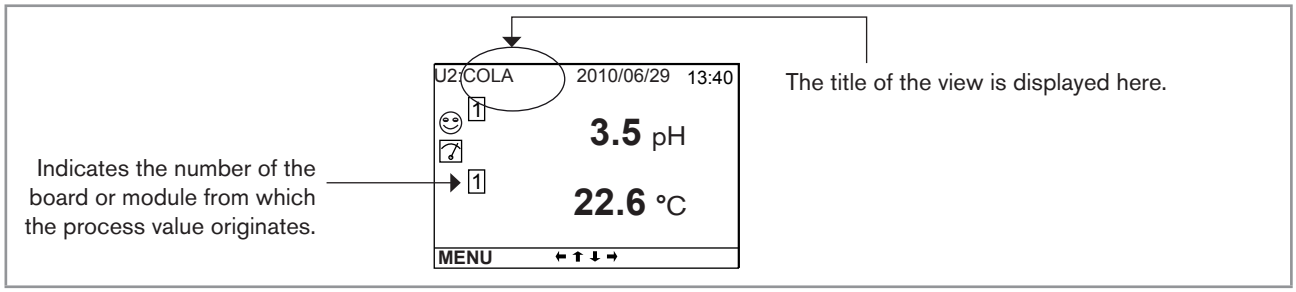
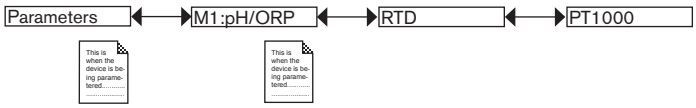


Fig. 22: Display of the pH and temperature values for the cola in the customized view "U2"

9.10.2. Configuring the temperature sensor

Refer to chap. *9.8* to access Parameters menu.



9.10.3. Calibrating the pH sensor

Refer to chap. *9.8* to access Calibration menu.

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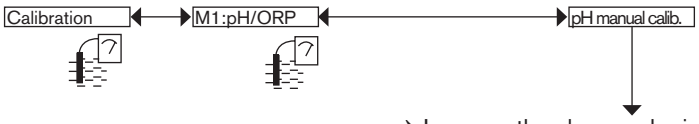
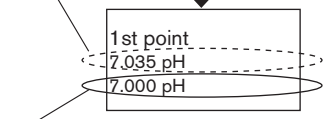
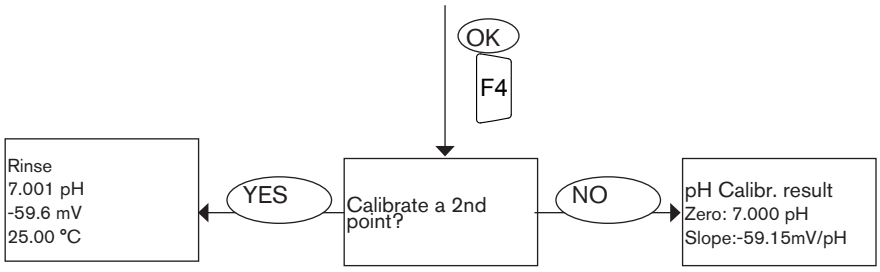


→ Immerse the clean probe in the first buffer solution: the multiCELL displays the measured pH of the solution.



→ Enter the pH of the buffer solution (indicated on the bottle)

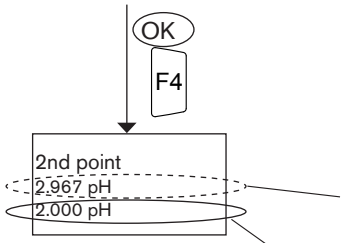
→ Wait until the measured pH stabilises.



→ Rinse the probe.

→ confirm rinsing by "OK" when the pH reaches the desired value.

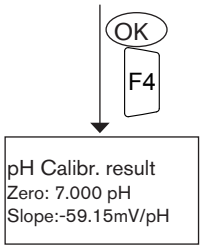
The multiCELL displays the calibration result. [1)]



→ Immerse the clean probe in the second buffer solution: the multiCELL displays the measured pH of the solution.

→ Enter the pH of the second buffer solution (indicated on the bottle)

→ Wait until the measured pH stabilises.



The multiCELL displays the calibration result. [1)]

1)

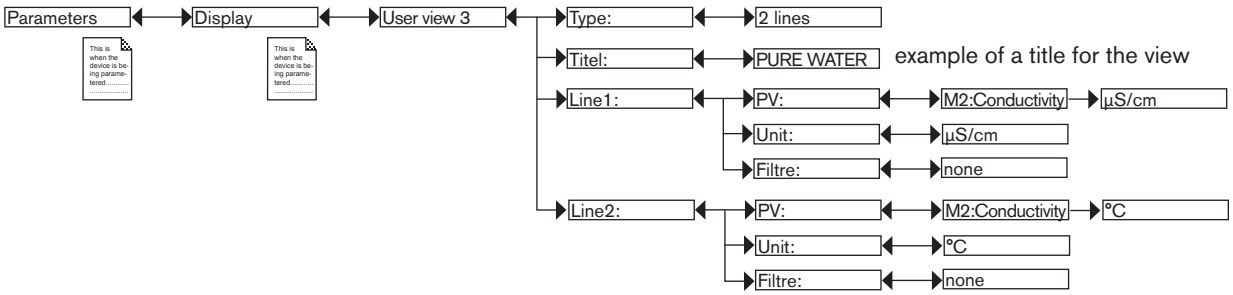
- a possible "warning" message indicates either an error in the buffer solution or the ageing of the probe.
- a possible "error" message indicates that the probe must be replaced.

9.11. Example for configuring a conductivity sensor

Example of a conductivity sensor and a Pt1000 temperature sensor both connected to the M2 module of the multiCELL 8619.

9.11.1. Customising the User view 3 to display both measured conductivity and temperature values

Refer to chap. *9.8* to access Parameters menu.



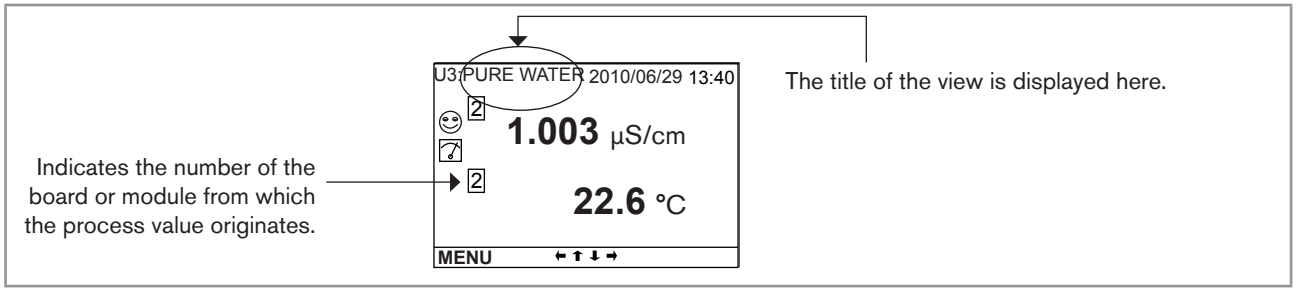
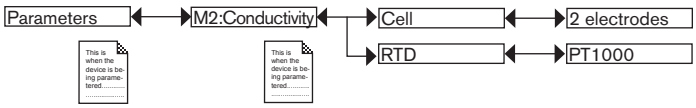

U3:PURE WATER 2010/06/29 13:40
2
1.003 µS/cm
22.6 °C
2
MENU
The title of the view is displayed here.
Indicates the number of the board or module from which the process value originates.

Fig. 23: Display of the conductivity and temperature values for the cola in the customized view "U2"

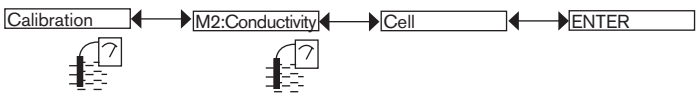
9.11.2. Configuring the conductivity cell and the temperature sensor

Refer to chap. *9.8* to access Parameters menu.



9.11.3. Entering the constant of the conductivity cell

Refer to chap. *9.8* to access Calibration menu.



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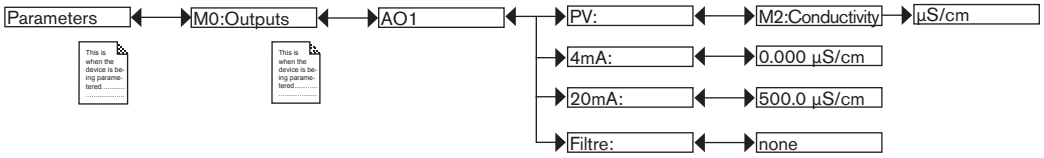
9.12. Example for configuring the AO1 analogue output of the "M0:MAIN" board

→ Associate the analogue output to the M2 module and to the conductivity range of 0 to 500 µS/cm.

Refer to chap. *9.8* to access Parameters menu.



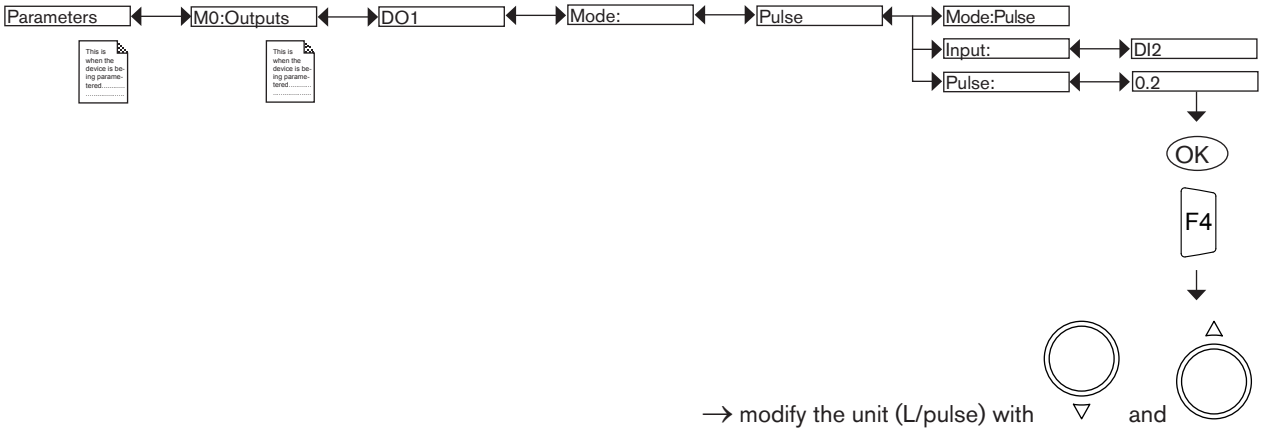
9.13. Example for configuring the DO1 digital output of the "M0:MAIN" board

The function is available on devices with an analysis module if the "FLOW" software option is activated.

→ Associate the digital output to the flow input DI2 in pulse mode.

→ Enter a pulse value equal to 0,2 litres.

Refer to chap. *9.8* to access Parameters menu.



→ modify the unit (L/pulse) with and

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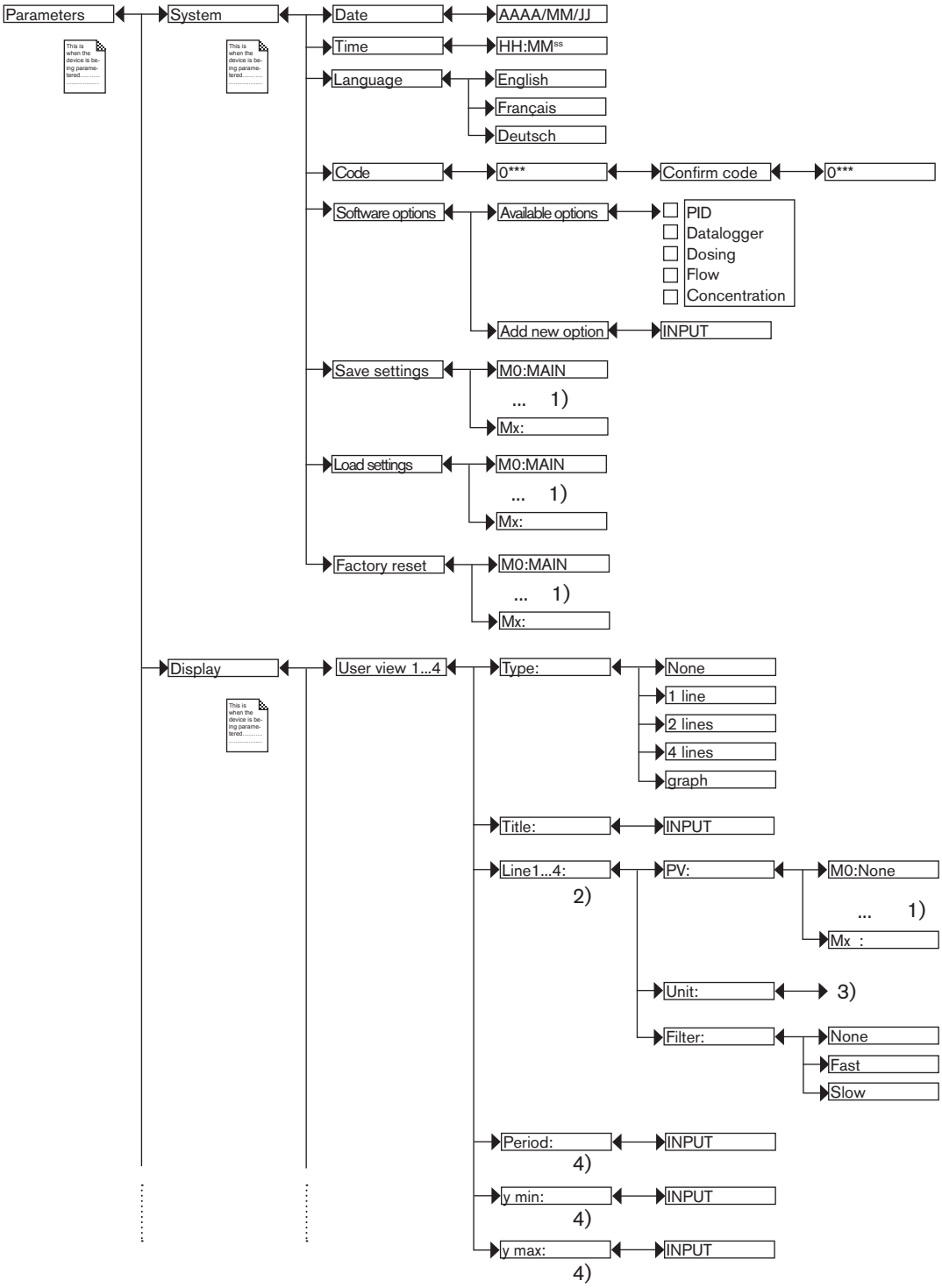
9.14. Structure of the configuring menus

Refer to chap. *9.8* to access Configuring mode.

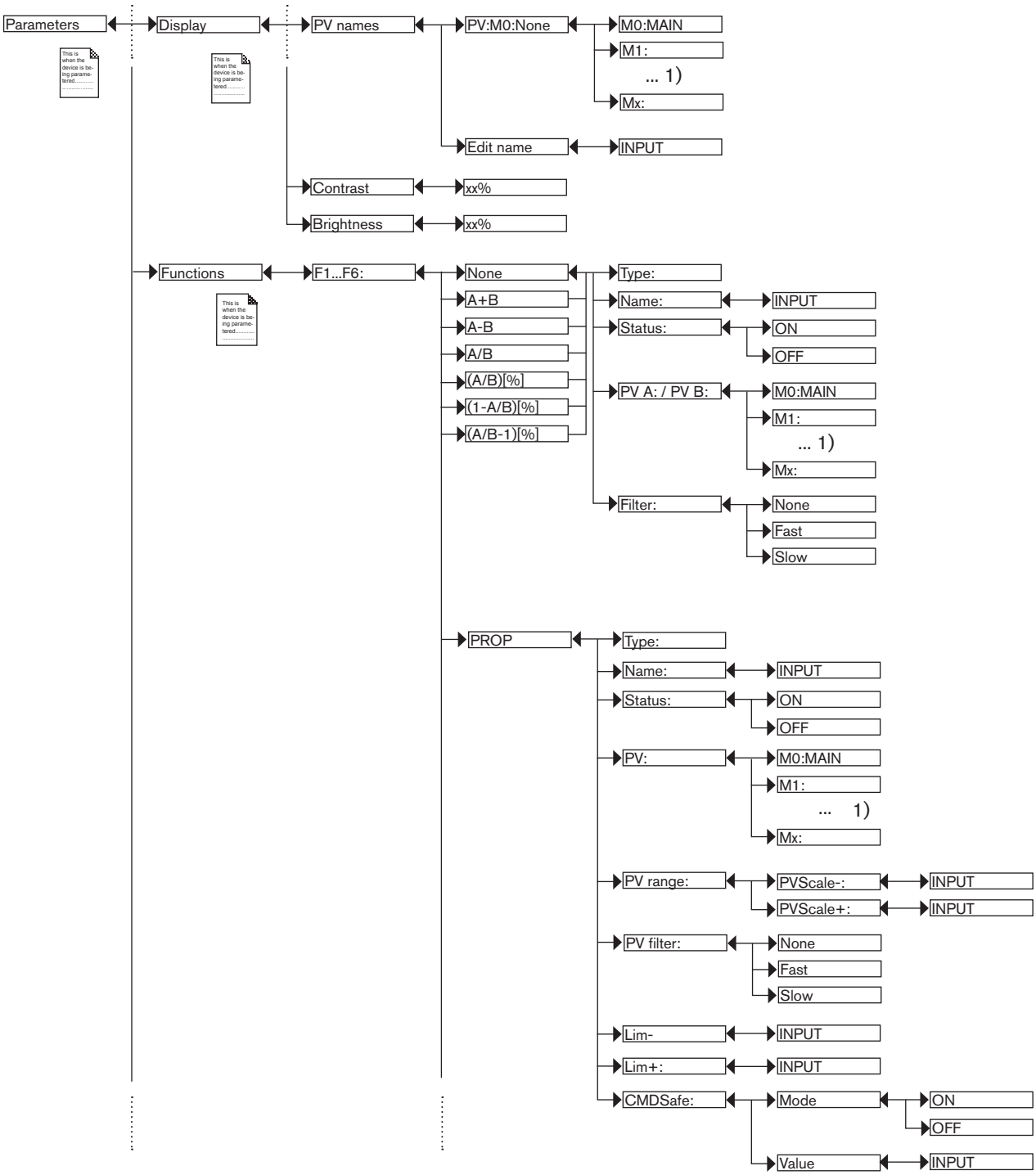


1) The choices offered depend on the modules fitted and/or the options activated.

2) If "Type" = 1, 2 or 4 "lines"

3) The choices offered depend on the chosen "PV".

4) If "Type" = "graph"



[1] The choices offered depend on the modules fitted and/or the options activated.

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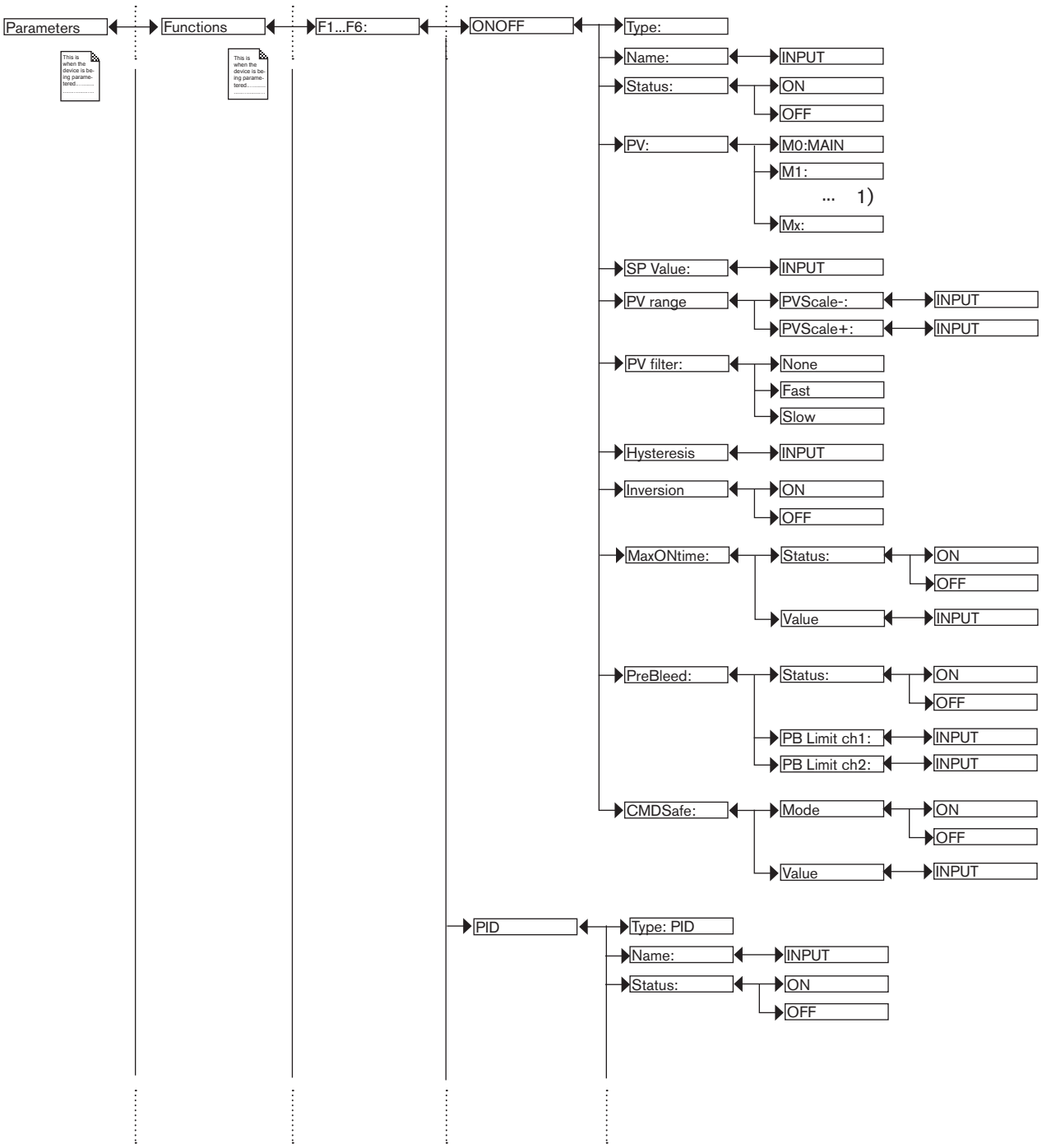

1) The choices offered depend on the modules fitted and/or the options activated.

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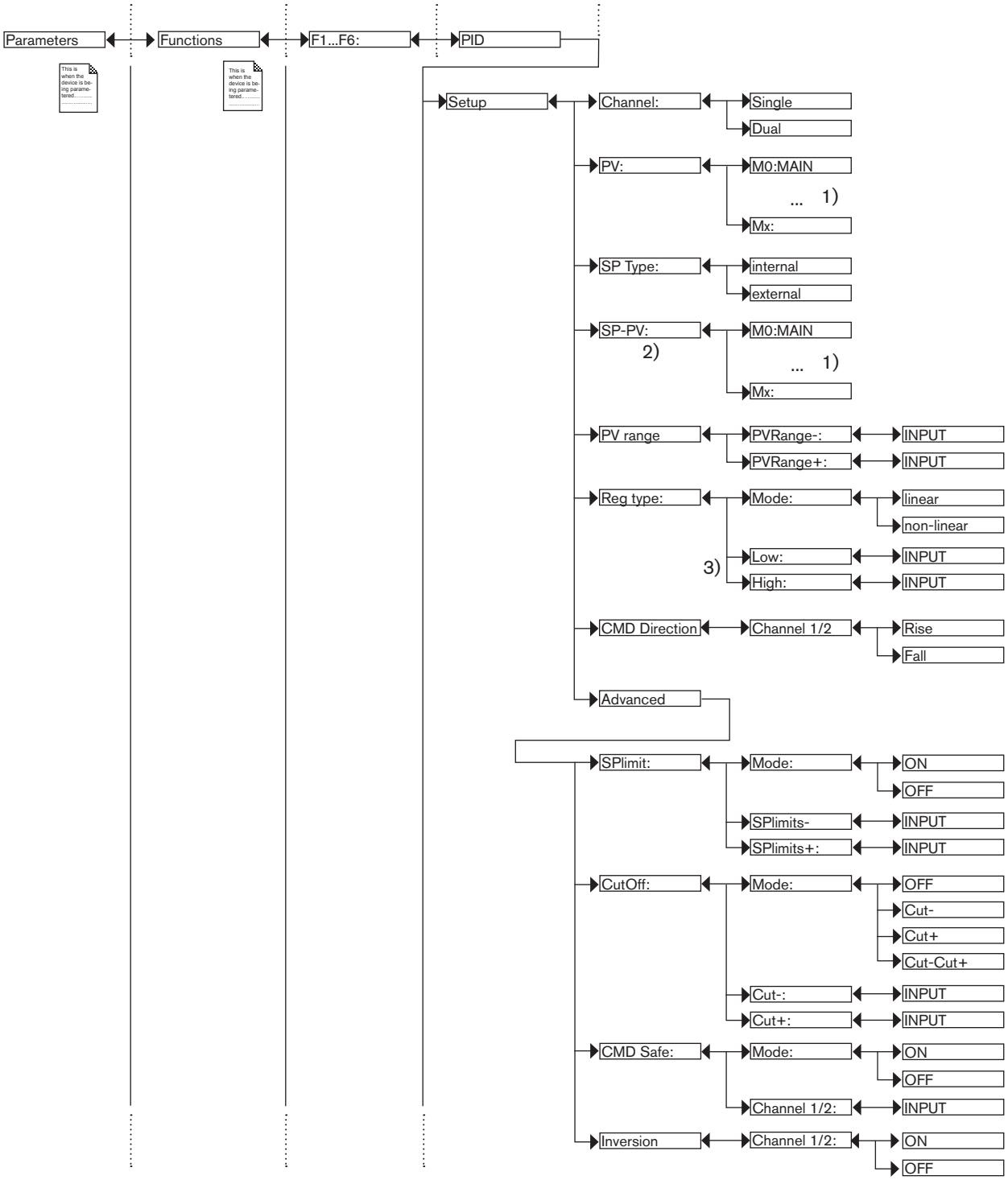

[1] The choices offered depend on the modules fitted and/or the options activated.

[2] This function is present if "SP Type" = "external"

[3] These functions are present if "Reg. Type Mode" = "non-linear"

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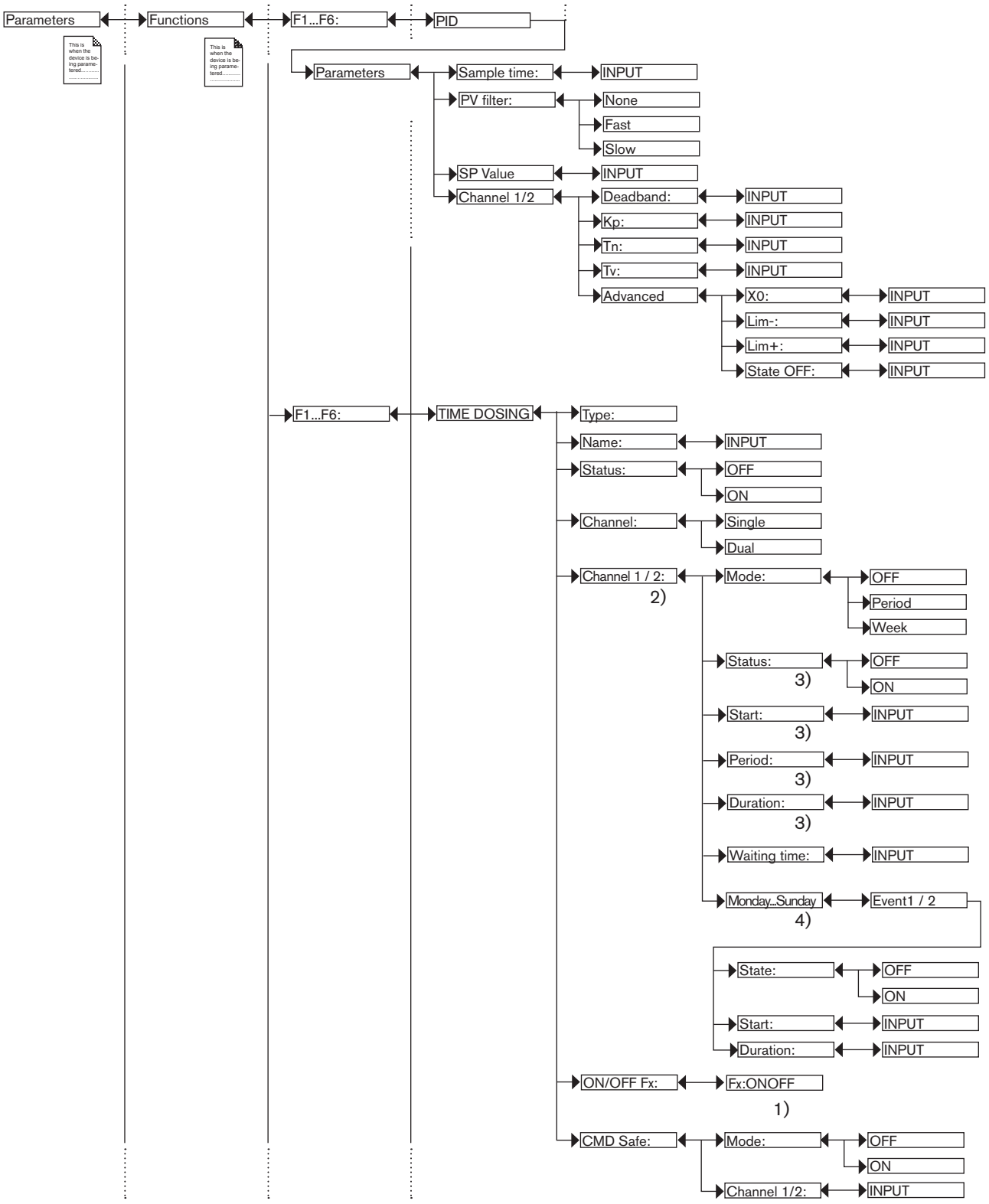

[1] *"Fx:" represents the ONOFF function declared "active"*

[2] *"Channel2" is present if "Channel" = "Dual"*

[3] *These functions are present only if "Mode" = "Period"*

[4] *These functions are present only if "Mode" = "Week"*

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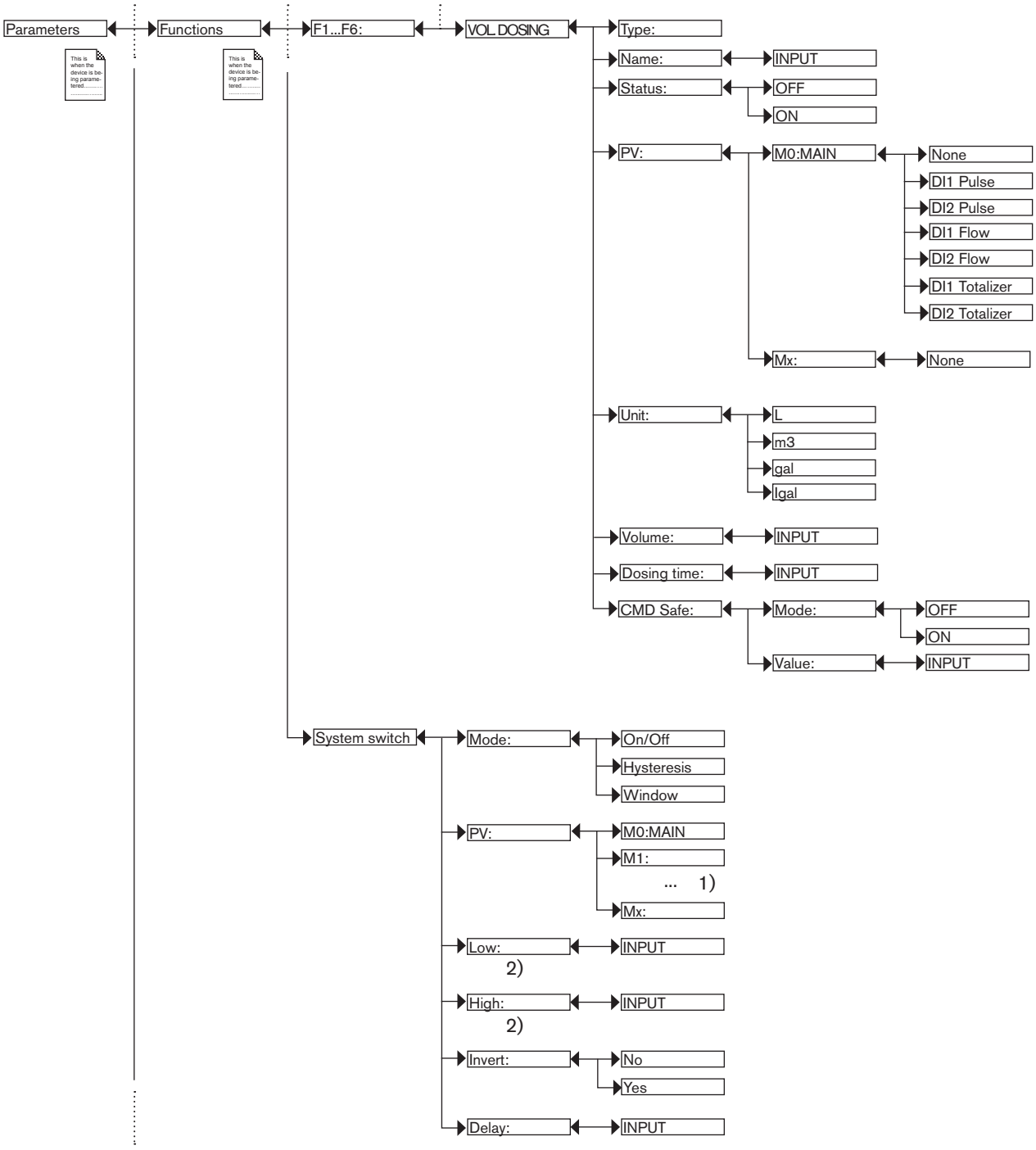

[1] The choices offered depend on the modules fitted and/or the options activated.

[2] These functions are present if "Mode" = "On/Off"

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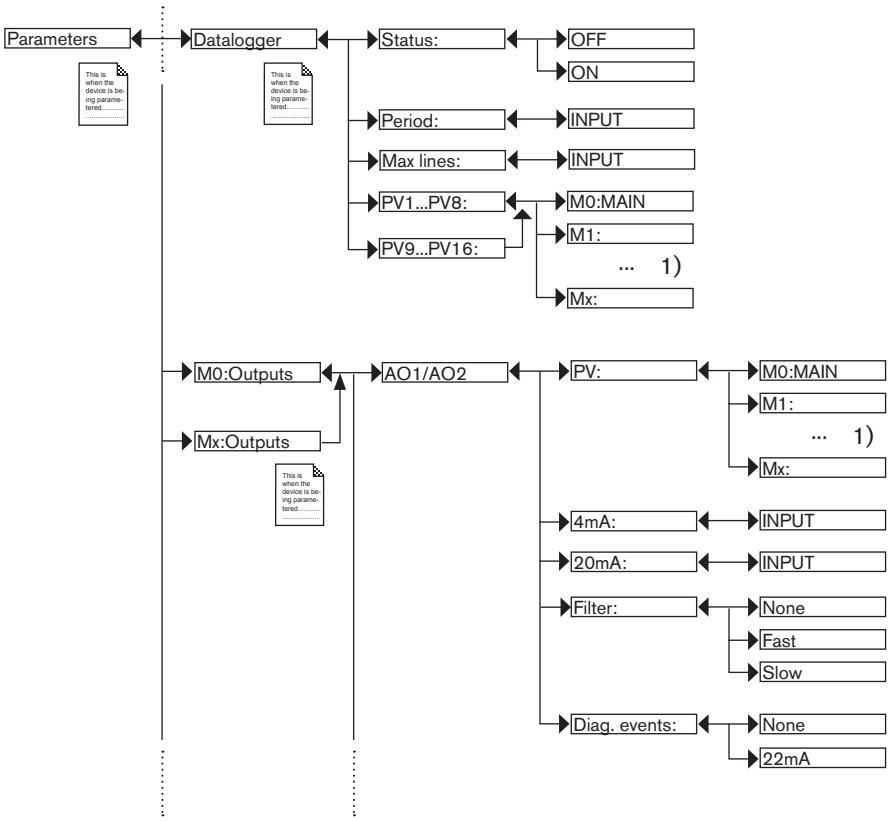

1) The choices offered depend on the modules fitted and/or the options activated.

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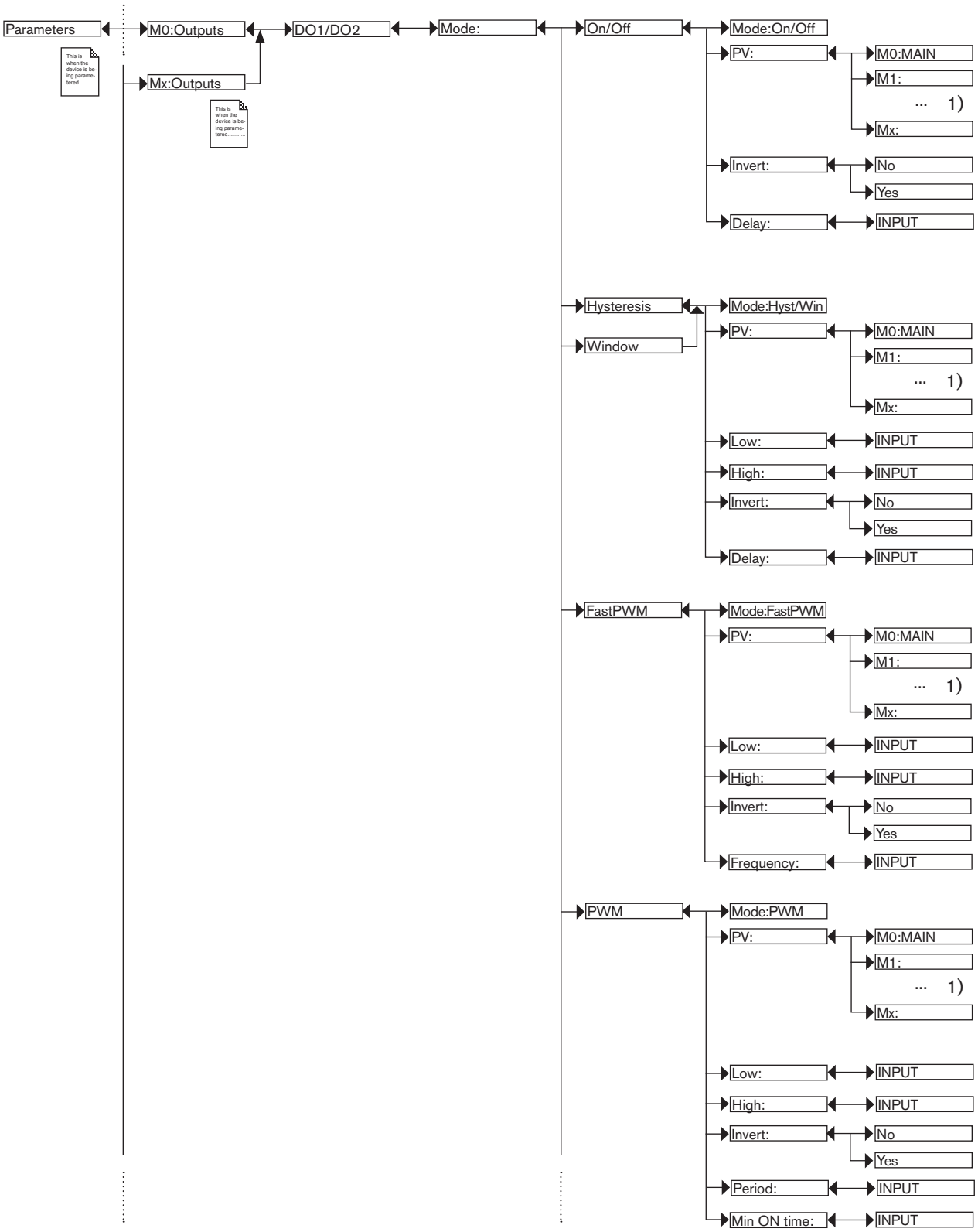

[1] The choices offered depend on the modules fitted and/or the options activated.

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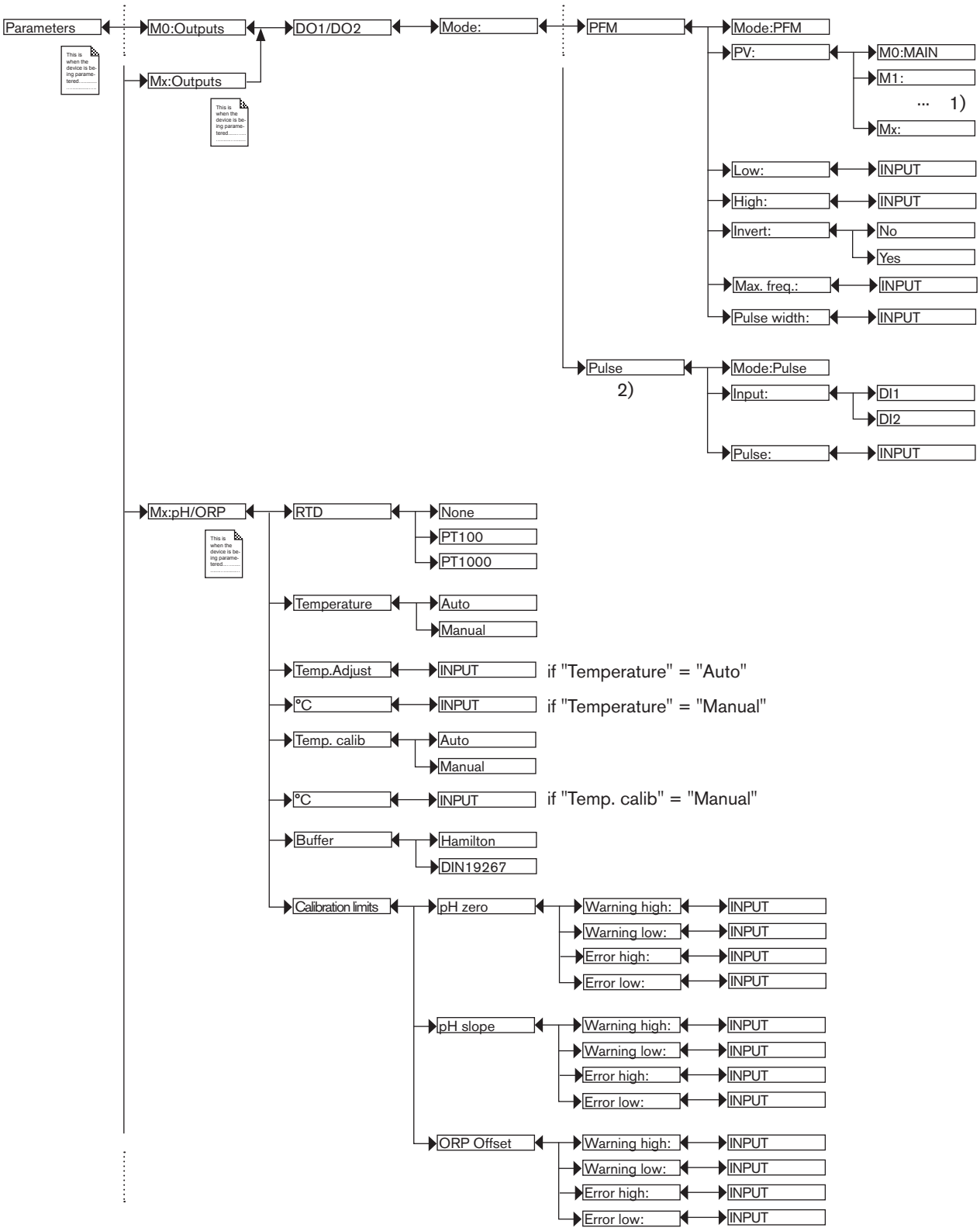

1) The choices offered depend on the modules fitted and/or the options activated.

2) Function possible only for the DO1 and DO2 outputs on the M0:MAIN board

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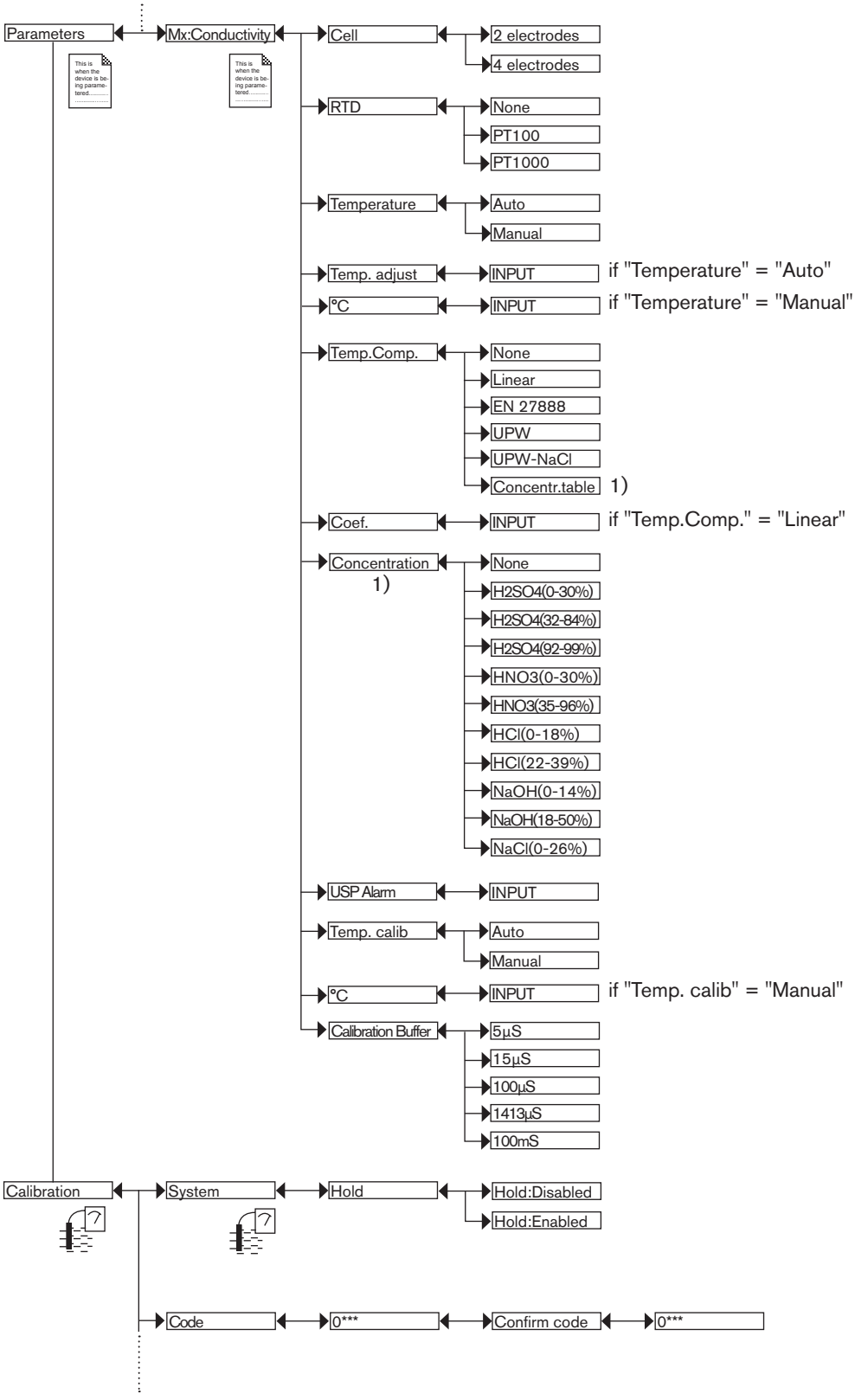

[1] *This menu is available as an option.*

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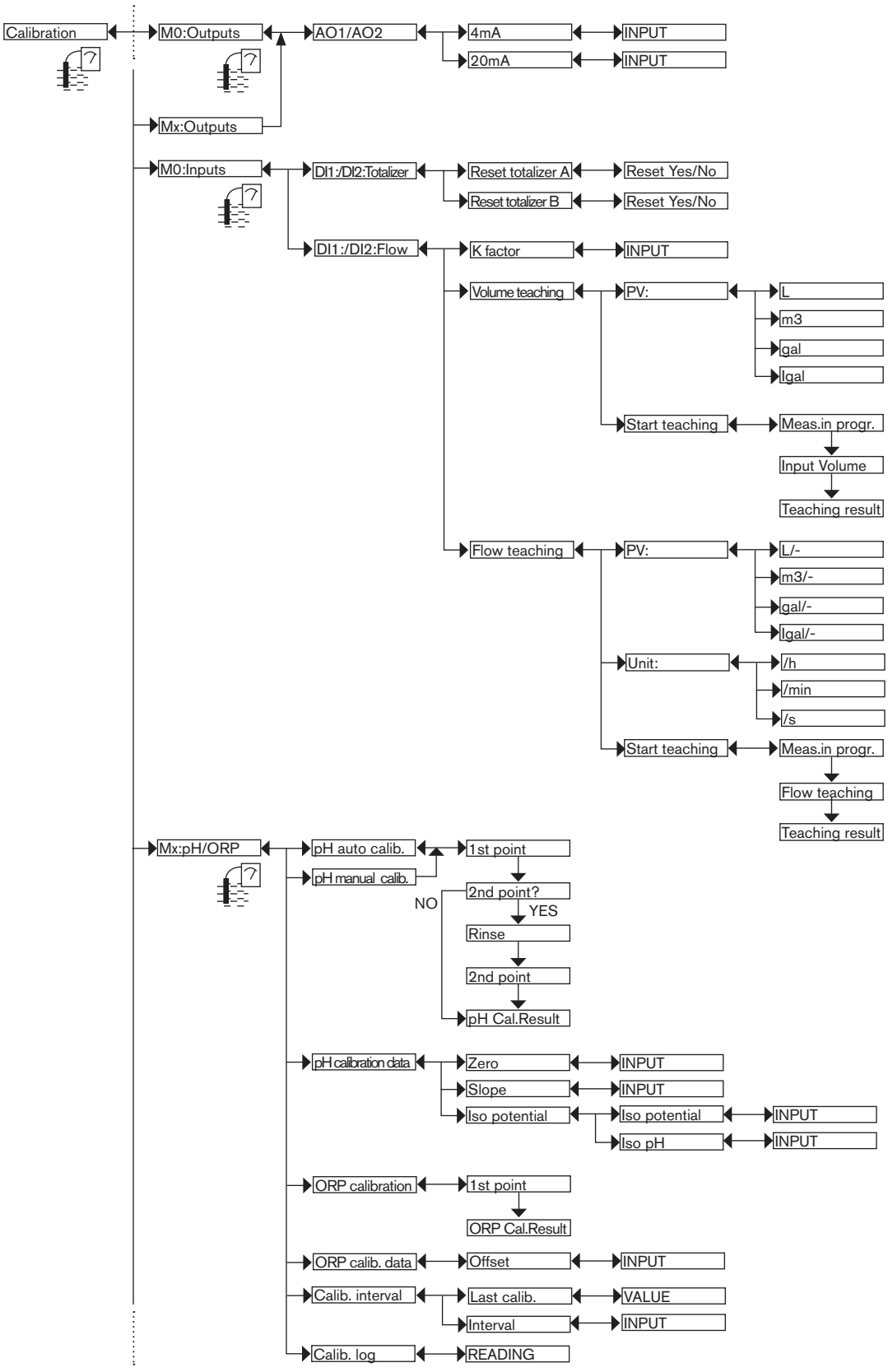
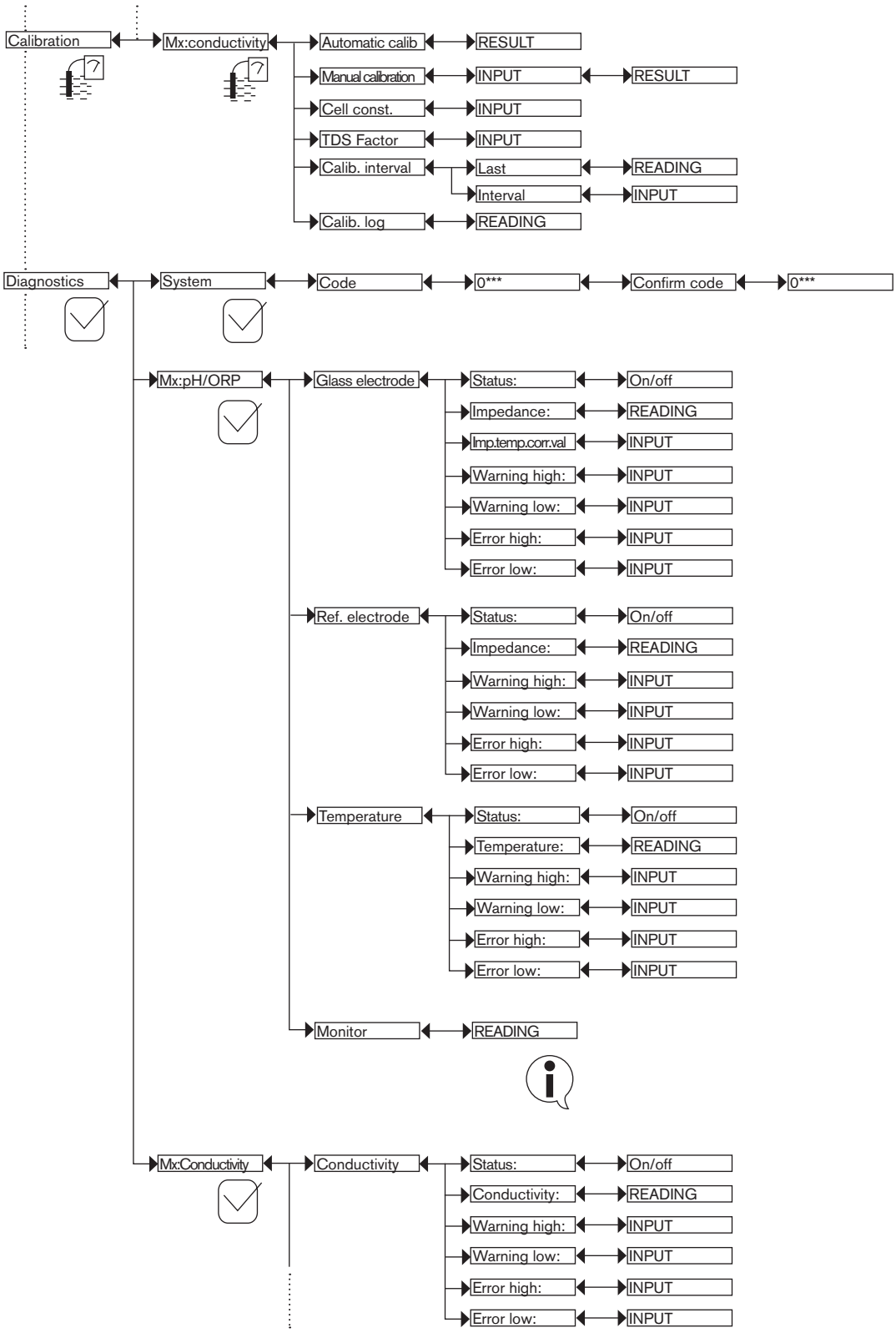


MAN 1000139645 EN Version: - printed: 05.08.2010 Status: RL (released | freigegeben)



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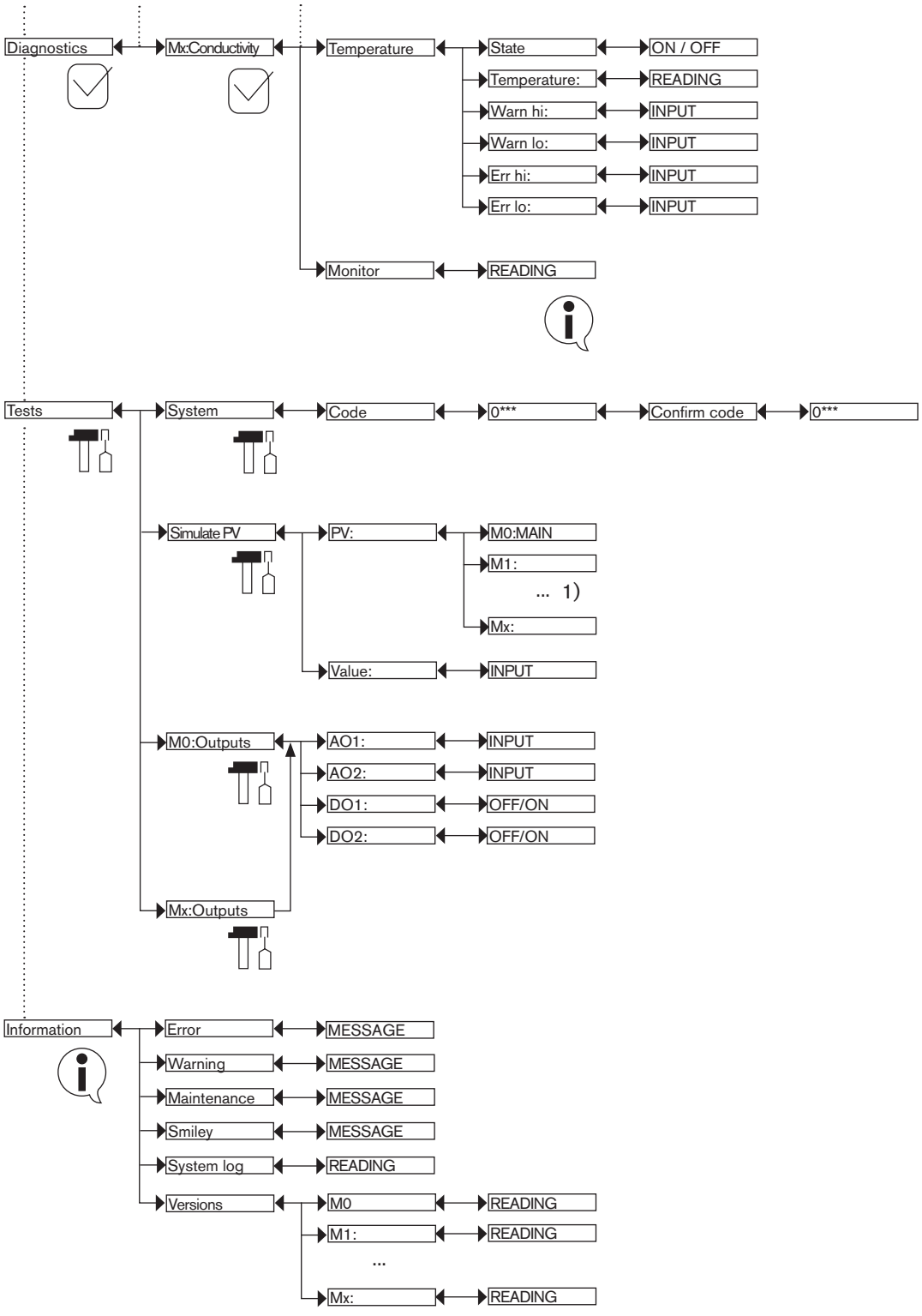

[1] *The choices offered depend on the modules fitted and/or the options activated.*

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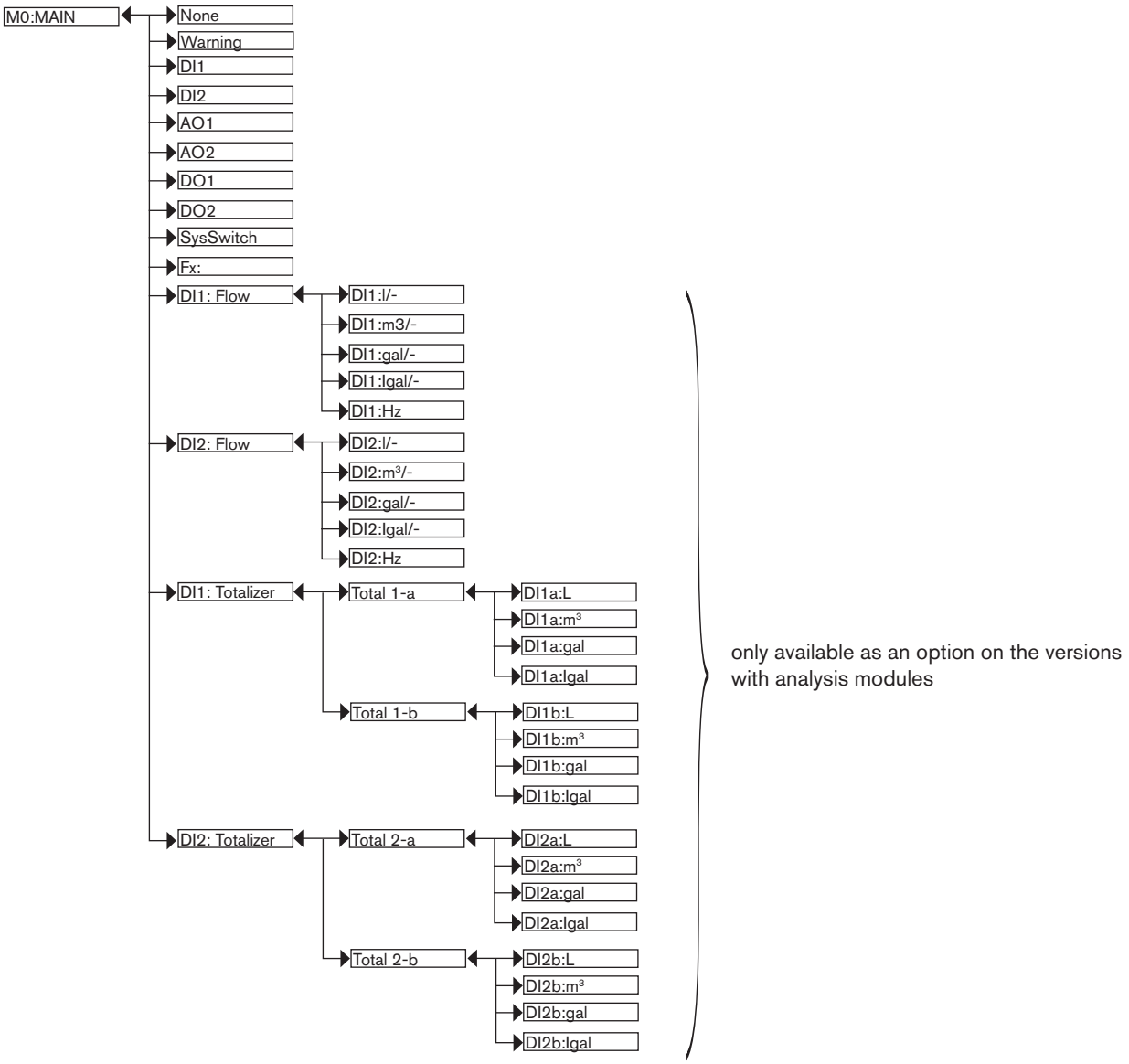
9.15. Process inputs or values

9.15.1. On the M0:MAIN board



"Warning" = event generated by the multiCELL

"DIx" = digital input

"AOx" = analogue output

"DOx" = digital output

"System switch" = when the corresponding event is configured and activated

"Fx:" = result of configured and activated functions

"DI1 Flow" = flow rate on digital input DI1

"DI2 Flow" = flow rate on digital input DI2

"DI1 Totalizer" = totalizers a and b on digital input DI1

"DI2 Totalizer" = totalizers a and b on digital input DI2

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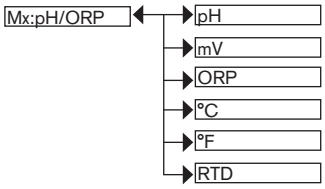
9.15.2. On the pH/redox module



"pH" = measured pH of the fluid

"mV" = measured pH of the fluid in mV

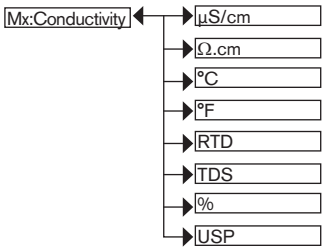
"ORP" = measured oxidation reduction potential of the fluid in mV

"°C" = measured temperature of the fluid in °C

"°F" = measured temperature of the fluid in °F

"RTD" = resistance of the temperature input in Ω

9.15.3. On the conductivity module



"µS/cm" = measured conductivity of the fluid

" Ω.cm" = resistivity

"°C" = measured temperature of the fluid in °C

"°F" = measured temperature of the fluid in °F

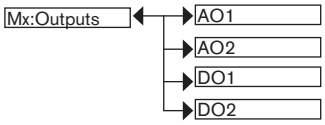
"RTD" = input resistance of the temperature stage in Ω

"TDS" = quantity of dissolved solids in the fluid in ppm

"%" = mass concentration of the fluid (software option)

"USP" = state of the USP function

9.15.4. On the additional outputs module



"AOx" = analogue output

"DOx" = digital output

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10. MAINTENANCE AND TROUBLESHOOTING

10.1. Safety instructions

DANGER

Risk of injury due to electrical discharge.

- Shut down and isolate the electrical power source before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

WARNING

Risk of injury due to non-conforming maintenance.

- Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.
- Guarantee a set or controlled restarting of the process, after a power supply interruption.

10.2. Maintenance of the multiCELL

The multiCELL can be cleaned with a duster slightly moistened with water with possible addition of a detergent compatible with the materials it is made of.

Please feel free to contact your Bürkert supplier for any additional information.

10.3. If you encounter problems

10.3.1. "Error" events related to the monitoring of process parameters (Right red LED and icons ⊗ and ☹ displayed)

When an error event related to the monitoring of the process parameters is generated:

- The 4-20 mA output(s) on the M0:MAIN board generate a current of 22 mA if "Diag. events" is configured as "22 mA"
- The transistor outputs operate normally.

Message displayed in the "Information" menu	Meaning	What to do
"Mx:E:Glass imped."	The impedance of the measurement electrode on the "Mx" module is out of range. This message is displayed if monitoring of the impedance of the measurement electrode on the "Mx" module is activated, depending on the ERROR LOW and ERROR HIGH thresholds defined.	→ Go to the "Diagnostics" menu to read the impedance value of the pH electrode. → if necessary, clean the probe then recalibrate the measurement sensor or replace the probe.
"Mx:E:Ref. imped."	This message is displayed if monitoring of the impedance of the reference electrode is activated, depending on the ERROR LOW and ERROR HIGH thresholds defined.	→ Go to the "Diagnostics" menu to read the impedance value of the reference electrode. → if necessary, clean the probe then recalibrate the measurement sensor or replace the probe.

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Message displayed in the "Information" menu	Meaning	What to do
"Mx:E:Conductivity"	The fluid conductivity is out of range. This message is displayed if monitoring of the fluid conductivity is activated, depending on the ERROR LOW and ERROR HIGH thresholds defined.	→ Go to the "Diagnostics" menu to read the fluid conductivity value. → if necessary, clean the cell then recalibrate the measurement sensor
"Mx:E:Temperature"	The fluid temperature is out of range. This message is displayed if monitoring of the fluid temperature is activated for the "Mx" module, depending on the ERR LO and ERR HI thresholds defined.	→ Go to the "Diagnostics" menu to read the value of the temperature measured. → If necessary, check whether the temperature sensor is working correctly by measuring a fluid with a known temperature. → If the temperature sensor is faulty, return it to the manufacturer. → if the temperature sensor is not the cause of the problem, check the process.
"Mx:E:RTD open"	The temperature sensor is not connected to the "Mx" module This message may only be displayed if the measurement mode of the temperature for module "Mx" is set to "automatic".	→ Connect a temperature sensor to the "Mx" module or → set the temperature value used in the process to "Manual" mode.

10.3.2. "Error" events related to a problem with the device (Left red LED and icons ⓧ and ☺ displayed)

When an error event related to a problem with the device is generated:

- The 4-20 mA output(s) on the M0:MAIN board generate a current of 22 mA
- The transistor outputs operate normally.

Message displayed in the "Information" menu	Meaning	What to do
"Mx:E:ORP sat." "MxE:pH sat."	The pH and/or redox value is not being correctly measured due to the saturation of the input stage of the measuring board	→ Check the correct wiring of the earth points → check the equipotential surfaces of the installation
"M0:E:Mx com."	The link to the measurement module(s) is interrupted	→ Switch the power supply off then on again → if the error persists, return the device to Bürkert
"Mx:E:Memory FR" "Mx:E:Memory IR"	Factory data is lost. The process continues but the accuracy of the device is modified.	→ Switch the power supply off then on again → if the error persists, return the device to Bürkert

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Message displayed in the "Information" menu	Meaning	What to do
"Mx:E:Memory UR" "Mx:E:Memory UW"	User data for the sensor is lost	→ Switch the power supply off then on again → check the parameters of all the sensors then save them again → if the error persists, return the device to Bürkert
"Mx:E:Memory CR" "Mx:E:Memory CW"	The calibration parameters of the "Mx" module are lost	→ Switch the power supply off then on again → if the error originates in the M0:MAIN board, perform a new teach-in → if the error originates in an "Mx" module, calibrate the sensor connected to this module again → if the error persists, return the device to Bürkert
"Mx:E:RTClock"	The clock is faulty. The process continues.	→ Return the device to Bürkert.

10.3.3. "Warning" events related to the monitoring of process parameters (Right orange LED and icons ⚠ and ☺ displayed)

When a "warning" event related to the monitoring of the process parameters is generated:

- The 4-20 mA output(s) operate normally
- The transistor outputs configured in "warning" mode switch.

Message displayed in the "Information" menu	Meaning	What to do
"Mx:W:Ref imped."	The impedance of the reference electrode on the "Mx" module is out of range. This message is displayed if monitoring of the impedance of the reference electrode is activated on the "Mx" module, depending on the WARNING LOW and WARNING HIGH thresholds defined.	→ Go to the "Diagnostics" menu to read the impedance value of the reference electrode. → if necessary, clean the probe then recalibrate the measurement sensor or replace the probe.
"Mx:W:Glass imped."	The impedance of the measurement electrode on the "Mx" module is out of range. This message is displayed if monitoring of the impedance of the measurement electrode is activated on the "Mx" module, depending on the WARNING LOW and WARNING HIGH thresholds defined.	→ Go to the "Diagnostics" menu to read the impedance value of the measurement electrode. → if necessary, clean the probe then recalibrate the measurement sensor or replace the probe.
"Mx:W:Conductivity"	The fluid conductivity is out of range. This message is displayed if monitoring of the fluid conductivity is activated on the "Mx" module, depending on the WARNING LOW and WARNING HIGH thresholds defined..	→ Go to the "Diagnostics" menu to read the fluid conductivity value. → if necessary, clean the cell then recalibrate the measurement sensor

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Message displayed in the "Information" menu	Meaning	What to do
"Mx:W:Temperature"	The fluid temperature is out of range. This message is displayed if monitoring of the fluid temperature is activated on the "Mx" module, depending on the WARNING LOW and WARNING HIGH thresholds defined.	→ Go to the "Diagnostics" menu to read the value of the temperature measured. → If necessary, check whether the temperature sensor is working correctly by measuring a fluid with a known temperature. → If the temperature sensor is faulty, return it to the manufacturer. → if the temperature sensor is not the cause of the problem, check the process.

10.3.4. "Warning" events related to a problem with the device (Left orange LED and icons ⚠ and ☺ displayed)

When a "warning" event related to a problem with the device is generated:

- The 4-20 mA output(s) operate normally
- The transistor outputs configured in "warning" mode switch.

Message displayed in the "Information" menu	Meaning	What to do
"M0:W:Time lost"	The date and time are lost.	→ Set the date and time again
"M0:W:ON/OFF time"	The duration defined in the parameter "Max-ONtime" in the ON/OFF function has been exceeded.	→ Deactivate then reactivate the ON/OFF function
"M0:W:Pulse x lim."	In "Pulse" mode, the volume entered for a pulse is incorrect.	→ Enter an appropriate volume → check the K factor.
"M0:W:Pulse x 1:1"	In "Pulse" mode, the volume entered for a pulse is incorrect.	→ Enter an appropriate volume → check the K factor.

10.3.5. "Maintenance" events related to calibration (Right orange LED and icons 🔧, ⚠ and ☺ displayed)

When a "maintenance" event related to calibration is generated:

- The 4-20 mA output(s) operate normally
- The transistor outputs configured in "warning" mode switch.

Message displayed in the "Information" menu	Meaning	What to do
"MxM:Time to cal."	A calibration is due on the sensor in the "Mx" module. The periodicity of calibrations is set in the "INTERVAL" function in the "CALIB INTERVAL" menu.	→ Calibrate the sensor

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10.3.6. Error messages during data saving

The following error messages may be displayed when saving data.

Message displayed	Meaning	What to do
"Missing memory card"	No memory card has been inserted into the device or the memory card has not been formatted.	→ Insert a memory card into the device. → Format the memory card.
"Datalogger is enabled"	The memory card is already used by the datalogger.	→ Deactivate the datalogger.
"File open"	The file cannot be created.	→ Format the memory card.
"Memory card write"	Write problem of the file.	→ Check that the memory card is not write protected. → Check that there is enough free space on the memory card.

10.3.7. Error messages during data loading

The following error messages may be displayed when loading data.

Message displayed	Meaning	What to do
"Missing memory card"	No memory card has been inserted into the device or the memory card has not been formatted.	→ Insert a memory card into the device. → Format the memory card.
"Datalogger is enabled"	The memory card is already used by the datalogger.	→ Deactivate the datalogger.
"Memory card read"	The file with the saved data cannot be read.	→ Check (on a PC) that the file with the saved data (named MxUSER.BIN) is present on the memory card.
«File open»	The file with the saved data is corrupted.	→ Use another file.
«Incompatible module»	You are trying to transfer data saved from a module to a module of different type (e.g. the data saved from a pH module to a conductivity module).	→ Load data to a module of the same type.

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11. SPARE PARTS AND ACCESSORIES

CAUTION

Risk of injury and/or material damage caused by the use of unsuitable parts.

Incorrect accessories and unsuitable replacement parts may cause injuries and damage the device and the surrounding area.

- Use only original accessories and original replacement parts from Bürkert.

12. PACKAGING, TRANSPORT

ATTENTION

Damage due to transport

Transport may damage an insufficiently protected device.

- Transport the device in shock-resistant packaging and away from humidity and dirt.
- Do not expose the device to temperatures that may exceed the admissible storage temperature range.

13. STORAGE

CAUTION

Poor storage can damage the device.

- Store the device in a dry place away from dust.
- Storage temperature: -20 ... +60°C, restricted to 0 ... +60°C if a memory card is inserted

14. DISPOSAL OF THE DEVICE

→ Dispose of the device and its packaging in an environmentally-friendly way.

CAUTION

Damage to the environment caused by products contaminated by fluids.

- Keep to the existing provisions on the subject of waste disposal and environmental protection.

Note

Comply with the national and/or local regulations which concern the area of waste disposal.

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